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SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1922.

No. 589.

THOMSON SPOT WELDER COMPANY,
PLAINTIFF-PETITIONER,

v.

FORD MOTOR COMPANY, RESPONDENT.

BRIEF FOR PLAINTIFF-PETITIONER.

STATEMENT OF THE CASE.

This case is brought to this Court by writ of certiorari issued to the Court of Appeals for the Sixth Circuit.

The suit was brought by the plaintiff-petitioner alleging infringement by the respondent of Harmatta patent No. 1,046,066, for "Electric Welding" granted to the Thomson Electric Welding Company, December 3, 1912, on an application of Johann Harmatta filed December 3, 1903 (Vol. I, p. 387). There is no question as to plaintiff's title to the patent. The suit was brought in the United States District Court for the Eastern District of Michigan, Southern Division, which court (Killits, Judge) held the patent invalid, whereupon a final decree was entered dismissing the bill of complaint (Vol. I, p. 50).

Upon appeal to the Circuit Court of Appeals for the Sixth Circuit, that court, Circuit Judge Denison dissenting, affirmed the decree of the District Court dismissing

the bill upon the sole ground, as appears from the opinion by Circuit Judge Knappen (Vol. III, p. 2098), that in the opinion of a majority of the court the Harmatta patent was invalid for lack of invention and patentable quality. The majority of the court expressly refused to consider any other defenses than want of patentability. His Honor Judge Denison, by dissenting from the conclusion of the court, must have regarded all the other defenses, as well as that of want of patentable quality, as insufficient.

The decision of the Circuit Court of Appeals for the Sixth Circuit, here sought to be reviewed, is in conflict with a previous decision of the Circuit Court of Appeals for the First Circuit in the case of *Thomson Electric Welding Company et al. v. Barney & Berry, Inc.*, October 5, 1915, holding the same Harmatta patent valid and infringed (Vol. I, p. 4), 227 Fed. Rep. 428.

The single and exact issue upon which the case was decided in the Sixth Circuit adversely to the patent was on full hearing decided by the Court of Appeals for the First Circuit in favor of the patent. In each case the full state of the art was presented and in each case there was no doubt that the defendant infringed.

The invention of the Harmatta patent resulted in the production of welds, integrally uniting thin sheets of iron or steel in spots, such welds taking the place of rivets, riveting being the only method for uniting such sheets which was in use prior to the Harmatta invention. *The process and product*, whether patentable or not, *were absolutely new* with Harmatta. By the invention, for the first time it was possible to unite by an integral union and without rivets or solder, plane flat sheets of metal, laid one upon the other, at as many spots, located anywhere in their meeting faces, as might be desired.

No one, before Harmatta, had ever united two plane

sheets in this manner by any method of welding, electric or blacksmith.*

Professor Wagner, professor of mechanical and electrical engineering at Rose Polytechnic Institute at Terre Haute, Indiana, has testified without contradiction that

“Harmatta struck out in a new field and accomplished something which had never before been accomplished by any method, namely, the welding together at isolated spots, and without previous preparation, parallel, superimposed metal sheets.” (Vol. I, p. 343).

The patented process is applied to a greater extent each year wherever sheets are to be united, for example, in steel boxes, cases, tubes, the steel finish of buildings and railway cars, automobile bodies, cooking utensils, stoves, furniture and innumerable articles made of thin sheets of iron or steel (Vol. I, p. 62).

The petitioner has made and leased or sold to users in all parts of the United States upwards of 1,000 machines on which the Harmatta process of spot welding is carried out (see Pl. Ex. No. 11, “List of Licensed Spot Welder Machines”). Upwards of 2½ billion spot welds are made on these machines every year (Vol. I, p. 134).

The defendant, a large manufacturing concern, has infringed the Harmatta patent by practicing the process and producing the product of said patent without license. There is no question of infringement in this case.

*Lap welding of the edges of two sheets, as in the well known case of welding the lapped edges of pipes was known, but this, as we shall show, is in no sense spot welding.

THE ISSUE AND THE DEFENSES.

The sole issue is whether the Harmatta patent in suit is valid. That it has been infringed by the defendant has never been questioned in the lower courts and we assume that it will not be questioned here.

The validity of the patent is attacked on the following grounds:

1. That the subject-matter of the Harmatta patent is lacking in patentable quality as compared with the prior patented art. It is not contended that there is any single patent in the prior art which discloses Harmatta's invention. Whether these prior patents taken as a whole disclose or suggest processes which are so analogous to Harmatta's patented invention that the man skilled in the art would without the exercise of invention practice the Harmatta process and produce the Harmatta product is the main question in this case. We shall therefore discuss this defense first.

2. That the Harmatta patent was not legally issued in view of the Patent Office proceedings. This defense ignores the controlling fact that Harmatta's original application, filed December 3, 1903, fully disclosed every detail of the process and every characteristic of the articles described and claimed in the issued patent.

3. An alleged prior use by a man named McBerty. As we shall show, even on the admitted facts this defense is not substantiated. McBerty's use was at most a mere abandoned experiment. Further, as we shall show, the established facts contradict the possibility of any prior use by McBerty.

4. That the plaintiff is estopped to deny that a man named Rietzel was the first and original inventor of the subject-matter of Harmatta's patent. This defense is based on a mistaken view both of the facts and of settled

principles of law as we shall show. To us it is unintelligible.

5. That a man named DeFerranti was the original and first inventor of the subject-matter of Harmatta's patent. We shall show that there is no basis for this defense. It seems impossible that it should be argued by defendant.



figure marked "Pressing", whereby the plastic metal at the joint of the two articles to be welded is united into a weld which is a molecular union of the metal itself.

The current employed in electric welding is heavy, that is of high amperage, but of low pressure, that is of low voltage. It therefore requires conductors of low resistance in order to carry the current to the work. Copper conductors of large cross-section are therefore used in electric welding. When this heavy current is forced through parts which are of high resistance compared with the conductors it generates heat. If the current is heavy enough and the resistance is large enough the parts will be raised to a welding temperature, about 2400° F. One of the essential steps in electric welding is to force this heavy current carried by large copper conductors through the work under such conditions that the resistance of the work causes a welding heat to be developed.

In the Thomson welding process, in the form shown in his fundamental patents, the iron or steel pieces to be welded extending out from the copper electrodes are not only of greater specific resistance than the electrodes (iron and steel are much poorer conductors than copper), but they are of substantially *decreased cross-section*. They therefore offer great resistance to the passage of the welding current, which resistance is increased to some degree by the imperfect contact at the joint.

In the specific application of his underlying invention which Thomson described and illustrates in his original patents the cross-sectional area of the work at the welding point is made comparatively small so as to confine or concentrate the heavy current to a small cross-sectional path, the resistance of which causes the current to generate the welding heat at that point. This is in accordance with the well known electrical law that the resistance of a conductor increases with the decrease of its cross-

section, or as more commonly stated its resistance is inversely proportional to its cross-section.

As we shall show, every inventor in the art of electric welding before Harmatta developed his particular electric welding process on this principle and law, namely to provide *in the work itself* a restricted path of comparatively small cross-section and hence high resistance through which he forced the heavy welding current for the purpose of generating the welding heat.* Harmatta, as we shall show, in the process of the patent in suit departed diametrically from this method of handling an electric current and discovered a new method of concentrating the current which was in seeming contradiction to established electric laws (*infra*, p. 16).

The generic Thomson electric welding process had gone into wide commercial use as early as 1887, sixteen years prior to Harmatta's invention. It was employed mainly for "butt welding", as welding the abutting ends of two rods is called. It was used also for welding other pieces of metal together at the places at which they were held in contact, as described in several patents of the art prior to Harmatta, which we shall explain, but before Harmatta it was never used for welding two sheets of metal in spots where the weld performs the duty of a rivet or in any way foreshadowing the Harmatta invention.

The only way of securely uniting sheets of metal at any point in their contacting surfaces, known in the art before Harmatta, was by rivets. Soldering only stuck them together. Riveting involved making holes in the two sheets, thus weakening them, and inserting and heading the rivet. The finished article was made up of three separate things, namely, the two sheets and the rivet

*The Court will note that such is the principle of the later Rietzel patent discussed (*infra*, pp. 69 and 219).

with its two projecting heads. The Harmatta process of electric spot welding is vastly superior to the old riveting process and has largely superseded it as a method for uniting sheets of metal. When a weld is made by the process of the Harmatta patent it results in a strong and perfect union; no holes are made, the metal is continuous from one sheet to the other through the weld and the backs of the sheets are flat with no unsightly and objectionable projections such as rivet heads.

Harmatta's idea of welding two such plane sheets at any spot in their meeting surfaces was a new departure not only in electric welding but in welding by any method (Vol. I, p. 343).

Harmatta was the first to make an invention whereby two plane sheets of metal could as a matter of practical commercial business be united at any spot in their meeting surfaces otherwise than by rivets, bolts or solder.

THE PATENTABLE QUALITY OF HARMATTA'S INVENTION.

The reasons why Harmatta's process and product were patentable are:—

1. Harmatta produced a new result, namely a small round *weld* (a spot weld) uniting two plane sheets of metal at any place in their meeting faces. This was radically new.

The idea of such a weld was in itself a flash of inventive genius. No one had ever before thought of making such a weld, either by blacksmith welding or by electric welding. It was as radical an idea as that of putting the eye in the point of a sewing machine needle, Howe's invention that made machine-sewing possible, and as the constant contact of electrodes in a telephone transmitter, the so-called microphone, which is the basis of the success of telephony.

No case decided by this Court has ever denied patent-

ability to an invention, be it process, product or machine, which was based on such a radically new idea and which accomplished such a definitely new and valuable result.

2. To make this spot weld Harmatta manipulated the articles with which he dealt, namely the sheets, *in a new way* by indiscriminately superimposing one upon the other and he made his electrodes perform a function, which no electrodes, used in electric welding, had ever before performed.

3. In so doing he carried out *a new technical process*, that is, the electric current, which generates the welding heat, behaved and operated in an entirely new way, which was unexpected and indeed contrary to the teaching and experience of the prior art, and he applied the welding pressure to a condition, which seemed to make such application impossible.

THE HARMATTA INVENTION.

As shown in Fig. 1 of the patent (Vol. I, p. 387), Harmatta places the two sheets of metal, in practice generally not over an eighth of an inch thick, with their plane surfaces in contact, between two electrodes *a, b*, which have bodies of relatively large cross-section, but tapered ends, which bear upon the work with comparatively small facial area. Right here are two novel features in electric welding:—

First, although the overlap of the sheets is shown in Fig. 1 as small, *the sheets may be overlapped to any extent* as no feature of the process is affected in any way by the extent of the overlap of the sheets. This, as we shall show, is radically different from each and every process of the prior art in which the limited overlap of the contact area of the parts to be welded is an inherent and necessary characteristic of such old process in confining the current to the parts where the weld is made.

Second, Harmatta, by tapering the ends of his electrodes, for the first time in the art confined to a small definite path, that is "concentrated" or "localized" the welding current *solely by means of the electrodes* and without assistance from the arrangement or shape of the articles being welded, the size and contour of the weld being determined by the shape of the electrodes. Harmatta's electrodes, as we shall show, differed not only in shape but *also in function* from any electrodes of the prior art for in no process of the prior art was the current concentrated solely by the electrodes but was concentrated by the limited area of contact of the parts to be welded.

It was radically new in the welding art to place two metal sheets in indiscriminate facial contact over an area, the extent of which was immaterial, and to apply pointed electrodes to the opposite sides of those sheets to concentrate the current. No prior inventor had ever suggested doing this. This was a radically *new principle of operation* inherent in and necessary to Harmatta's invention.

This new principle of operation alone, because it dispenses with the necessity of a particular arrangement or shape of the articles being welded, has given his process great flexibility and adaptability to the welding of all kinds of thin metal articles.

With the work to be welded placed in position, Harmatta first grips the sheets between the electrodes, one electrode being on one side and the other on the other side of the spot to be welded, and at the same time passes an electric welding current from one electrode to the other through the work.

Harmatta *discovered* that under such conditions the current would not spread itself in the sheets and cross the joint between them over their wide area of contact, but that it would flow across the joint between the sheets

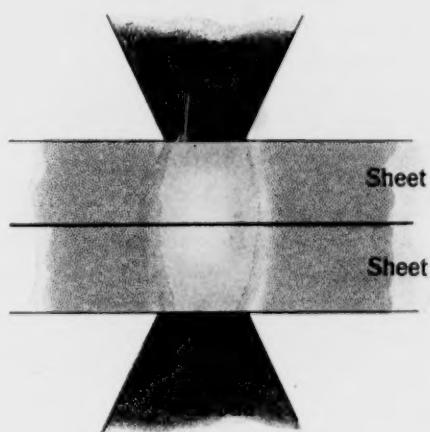
only at the path or spot in line with the ends of the electrodes. The resistance of this joint and of the metal of the sheets at the spot at which the current is concentrated, heats the sheets at this spot, and at this spot only, to a welding temperature as shown in the upper figure of the accompanying drawing in which the metal heated to welding temperature is shown in yellow, the less heated metal in red and the cold metal in blue.

The discovery that the current would thus be "concentrated" by the pointed electrodes and would confine itself to the path or "spot" between the ends of the electrodes was radical. This was a discovery of a new function to be performed by electrodes. There is no suggestion of any such phenomenon in the prior patents, as we shall show. In accordance with all known laws of electricity the resistance of a conductor, here the sheets, is inversely proportional to its cross-section, hence it would be expected that the resistance at the joint between the sheets, which is of any area however large, would be too small to create the heat necessary for welding. But contrary to such expectation Harmatta discovered that the heavy (high amperage) welding current of low voltage would not so spread itself but would stay in the direct path and cross the joint between the tapered ends of the two electrodes. Nothing of that sort was suggested or fore-shadowed by any item of the prior art. It was indeed contrary to the teaching of the prior art and a discovery of rare quality. It is the kind of "discovery" that is intended to be protected by the patent statutes and constitutes a real invention.

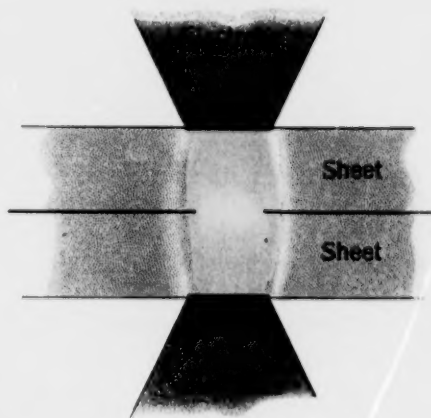
Harmatta then presses the electrodes toward one another as shown in the lower figure of the accompanying drawing. He is able to do this in spite of the already existing extended bodily contact of the sheets and their consequent relative immobility, because *the small ends of the electrodes bear upon softened metal only.* This was a

HARMATTA.

HEATING.



PRESSING.





radically new feature in electric welding; in each and every welding process of the prior art the parts to be welded are in contact over a limited area and as those parts become soft the pressure of the electrodes, which also bear upon cold unyielding metal, one at each side of those parts, squeezes the parts *bodily* together to make the weld. No such bodily movement of the sheets is possible or is carried out in the Harmatta process in which the sheets are in extended facial contact and therefore can not be moved bodily any closer together.

The movement of Harmatta's electrodes is only very slight. There is only a very slight indentation on the backs of the sheets on which the electrodes bear. This is a novel characteristic peculiar to the Harmatta process. No one before had ever made a weld with so little movement of the electrodes and disturbance of the metal. There is little or no extruded metal in a true Harmatta weld. The reason is that when Harmatta's electrodes apply pressure there is no place for the metal to go because the soft metal is surrounded as by a frame of cold unyielding metal, and therefore but a slight compression of the electrodes serves to force the hot metal together at the spot between the sheets to make a real weld just at that point and at that point only.

In every prior welding process the softened contacting parts are squashed together by the electrodes and the extruded metal squeezes out on each side of the joint. No such operation is possible or is carried out in making an Harmatta spot weld.

There is no suggestion in any patent of the prior art of such a small pressing movement of the electrodes or of the result accomplished, namely a small weld surrounded with cold metal and with only the slightest indentation on the backs of the sheets where the weld is made.

For the first time in the art of welding in general.

Harmatta welded together two plane sheets of metal at an isolated spot in their meeting faces.

For the first time in the art Harmatta produced a process by which metal sheets as a whole were united *in situ*, a weld being made without moving one sheet bodily toward the other. Only slight indentations in the backs of the sheets are made by the pressure of the electrodes on the softened metal.

The spot welding process of the Harmatta patent was first introduced into the United States in 1904, directly from Harmatta, by the purchase of a license for kitchenware and like articles by the National Enameling & Stamping Company, well known to be then and now the largest manufacturer of kitchenware in the United States, from the Essenhutte Silesia Company of Hungary, the owner of Harmatta's rights. The license, dated December 3, 1904, is in evidence (Vol. I, p. 433). With the license the National Company purchased two Harmatta spot welding machines which are now in its factory and have been in constant use up to the present time. Since then the National Company has built and used between eighty and one hundred spot welding machines (Vol. I, p. 125). Undoubtedly this extensive use of the Harmatta process and the sale of its products by the National Company beginning in 1904 spread the knowledge of Harmatta spot welding throughout the United States.

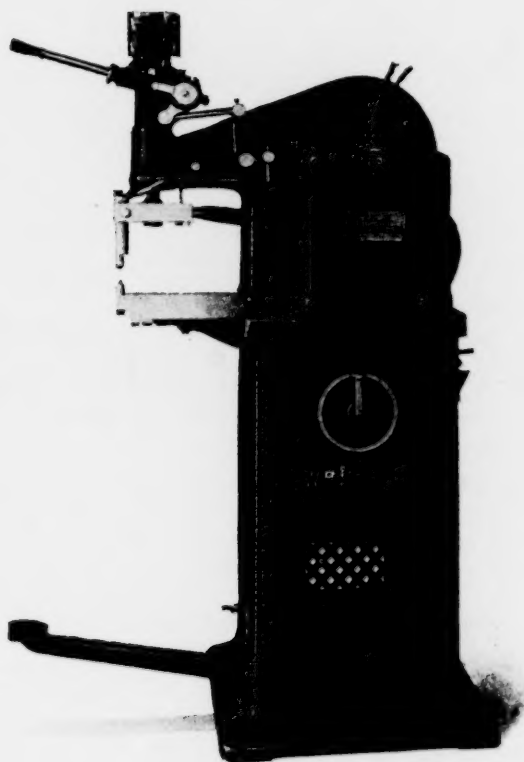
A TYPICAL SPOT WELDING MACHINE.

We show here Plaintiff's Exhibit No. 1, a picture of a spot welding machine used by the defendant. It is a typical spot welding machine.

In operating the machine the workman places the two sheets of metal face to face between the electrodes, which are shown extending from horizontal arms at the left of the machine and with their ends slightly separated from

PLAINTIFF'S EXHIBIT No. 1.

Defendant's Spot Welder.





one another. The sheets rest upon the lower electrode. He thereby locates the spot to be welded *at any desired point* in the plane meeting faces of the sheets (a possibility never attained by any one or by any process before Harmatta).

The operator then, either by the foot treadle or by the upper hand lever, presses the upper electrode down toward the lower electrode until the two sheets are held firmly between the electrodes at the spot to be welded. He turns on the current by a suitable switch and when the parts have been sufficiently heated he gives the electrodes an extra squeeze to complete the weld. He then cuts off the current and releases the work.

The operation is simple but requires a certain amount of skill, easily acquired by the operator, in turning off the current at the right moment and in operating the pressure devices.

THE NOVEL TECHNIQUE OF HARMATTA'S PROCESS.

As already stated, Harmatta's invention is radically new from at least three aspects.

First, the original *idea* of making a weld to take the place of a rivet at any place in the meeting faces of the plane sheets of metal.

Second, the idea of a new manipulation of the parts and elements involved, namely the indiscriminate placing of the two plane sheets face to face without regard to the place or to the extent of contact, and the use of pointed electrodes instead of the arrangement of the work itself to concentrate the current, and

Third, the discovery and invention of a new welding technique.

The First and Second above stated propositions need only to be stated to be understood and appreciated. The Third we will explain more fully.

In the accompanying drawing we have illustrated the

phenomena which take place in the Harmatta process of spot welding described by plaintiff's expert Gravell (Vol. I, pp. 61-63). In this drawing the size of the parts is exaggerated for purposes of illustration. The parts are shown in cross-section.

The electrodes *a, b* are pointed and press with their ends opposite to one another against the backs of the sheets which lie in facial contact.

The current, illustrated in dotted lines, is concentrated or localized in a narrow path through the sheets by the points of the electrodes.

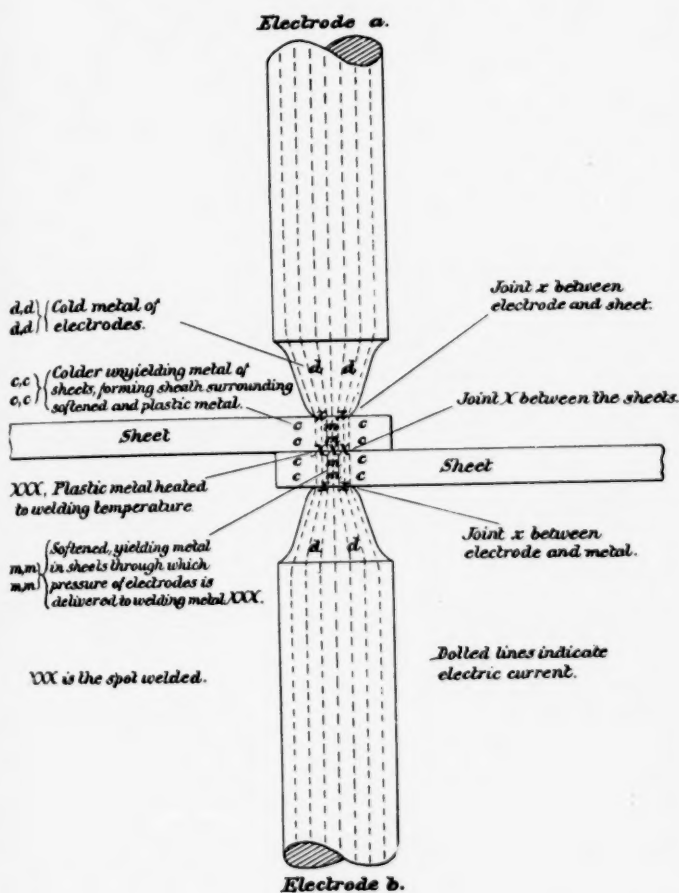
The surprising thing is that the resistance to the flow of the current in this path caused by the metal of the sheets does not cause the current to spread out in the sheets, and thereby take a wide path of less resistance. The resistance of these parts generates heat and, as the resistance is greatest at the joint, the greatest heat is there generated (Gravell, Vol. I, p. 85; Thomson, Vol. I, p. 540, Q. 59). As the resistance of the metal increases and its temperature rises another surprising thing is that this increase in resistance at the spot does not itself force the current to spread into the surrounding cold metal of less resistance, and thereby prevent the metal at the spot from ever reaching the high temperature necessary for welding.

Heat flows from the heated parts into the cold surrounding metal.

The metal in the sheets at the joint X, X, X between the sheets is soon raised to a welding temperature at which it becomes plastic and weldable.

The heat generated at the joints *x, x* is dissipated through the sheets and through the masses *d, d* of the cold electrodes so that the metal of the sheets near these joints does not rise to welding temperature but does rise to a high enough temperature to become somewhat soft and yielding. (If it rose to too high a temperature the electrodes

TECHNIQUE OF HARMATTA PROCESS.





and the sheets might become so soft as to prevent the transmission of the pressure of the electrodes to the metal at the joint X, X, X to be welded or the electrodes might even be welded to the sheets, or punch holes through them.)

The heat generated in the parts *m, m* between each electrode and the joint X, X, X and the heat flowing into those parts raise them also to a temperature at which they become soft and yielding.

The surrounding metal *c, c, c, c* in the sheets is of course heated by the flow of heat into it but not high enough to soften it or make it yielding. It is, as compared with the enclosed metal *m, m, X, X, X* and *m, m*, cold and unyielding.

The Harmatta process, therefore, creates this condition, namely plastic metal at the joint X, X, X heated to welding temperature at a spot at the joint between the sheets, which plastic metal is backed by soft yielding metal *m, m, m, m*, and all the softened metal is surrounded by comparatively cold unyielding metal, *c, c, c, c*. *This condition, for the first time created in the art by Harmatta, makes it possible to weld the metal together at the joint X, X, X without moving the sheets bodily towards one another.* No weld had ever been made before without moving the welded articles bodily towards or into one another.

In the Harmatta process the pressure of the electrodes is transmitted to the plastic metal at the joint X, X, X between the sheets by squeezing down firmly but slightly the soft metal *m, m, m, m*, back of the plastic metal, and as the unyielding surrounding cold metal *c, c, c, c* prevents any sidewise movement or escape of the soft and plastic metal in the two sheets, the plastic metal at the joint X, X, X of the two sheets is forced together to make the weld. The weld has substantially the same area as the ends of the electrodes.

This operation of pressing and moving only softened yielding metal by localizing the pressure thereon, without moving bodily the articles being welded, was absolutely new with Harmatta.

To state the matter more briefly:

In the Harmatta process an electric current is concentrated or localized solely by tapered electrodes in those portions of contacting metal sheets which lie between the electrodes. The resistance met by the current does not spread the current throughout the sheets but causes the metal adjacent to the joint X, X, X, between the sheets to heat to welding temperature and become plastic in spite of the dissipation of heat through the surrounding cold metal *c, c, c, c* of the sheets. At the same time the parts *m, m, m, m* of the metal sheets, lying between the metal at the joint X, X, X heated to welding temperature and the ends *x, x* of the electrodes, are heated enough to be soft and yielding. The pressure exerted by the electrodes acts only upon the yielding and plastic metal lying between the ends of the electrodes, all of which metal is confined in a comparatively cold unyielding metal sheath *c, c, c, c*, and thereby completes the weld without moving the sheets bodily towards one another.

A slight indication on the backs of the sheets shows the effect of the pressure of the electrodes on the softened metal.

PATENTABLE NOVELTY OF HARMATTA'S INVENTION BRIEFLY STATED.

Our discussion of the prior art will show, we submit, that from any one of three points of view there was patentable novelty in Harmatta's invention:—

1. *The idea of making a spot weld, i. e., a weld uniting two thin plane sheets of metal at any place or at any number of places in their meeting faces, which perfectly answers the purpose of a rivet.*

2. *The idea of a new manipulation*, namely (a), placing those sheets in any kind of facial contact, without regard to the extent of that contact, and (b), using pointed electrodes to bear upon the work. This involved *the new idea of a new functional operation of the electrodes*, namely that of being the sole means of concentrating the current. In all previous electric welding it was the predetermined relative arrangement or shape of the two pieces to be welded which confined the current to a path of limited cross-sectional area, by which the resistance necessary for the generation of the welding heat was provided.

3. *The technique of the process*, as above explained, involving a new and unexpected behavior of the current and a new pressing effect produced under new conditions.

Harmatta's invention therefore involved *a new result*, the spot weld, *a new manipulation* of the parts to be welded, *a new function* of the welding instrumentalities and *a new technique* in the welding steps of heating and pressing.

PATENTS OF THE PRIOR ART.

The patents of the prior art relied on by the defendant to show lack of patentable novelty in Harmatta's invention, may be divided broadly into two classes: *first* those which describe processes and devices which are *not* electric welding, using that term in the sense of the art created by Prof. Thomson's basic patents of 1886, and *second* the patents which relate to electric welding (Gravell, Vol. I, p. 151).

The patents which are *not* for electric welding are as follows:

Benardos, No. 363,320 for arc welding.

Coffin, No. 437,571 and Benardos German patent No. 50,909 for hot resistor welding.

Thomson, No. 496,019 for soldering.

Blanchard, No. 466,266, Lemp 531,197 and Burton 647,694 for heating only.

Thomson, No. 396,015 for riveting.

All of these patents were set up in the answer and those of them which were considered at all pertinent were discussed in the Record in the Barney & Berry case in the First Circuit.

The patents on *electric welding* besides Thomson Nos. 347,140, 347,141, already discussed (*supra*, pp. 6-8), are as follows:—

Robinson 574,942 and Kleinschmidt 616,436 for butt-welding;

Thomson 444,928 and Lemp 553,923 for lap joint roller welding.

Perry 670,808 for cross-wire welding, and

Parkinson (British) 14,536 of 1894 for glut-welding.

All of these patents, with the exception of Robinson and Parkinson, were set up in the answer and referred to in the Record, as far as deemed pertinent, in the Barney & Berry case in the First Circuit.

The Robinson and Parkinson patents add nothing material to the prior art disclosed by the other patents.

The Harmatta patent itself refers to the butt-welding process (Thomson No. 347,140, and No. 347,141) the lap-joint roller welding process (Thomson No. 444,928, and Lemp No. 553,923), arc-welding (Bernardos No. 363,320) and hot resistor welding in which the heat is developed in resistance material and is imparted to the work by conduction (Coffin No. 437,571 and Benardos German patent No. 50,909). It specifically disclaims the method set forth in the Kleinschmidt patent No. 616,436, which is a species of butt welding.

The Patent Office allowed Harmatta's patent after due consideration of the Benardos United States patent, Thomson patents Nos. 444,928 and 496,019, the Klein-

schmidt patent, the Burton patent, the Perry patent and others not above referred to.

Not one of the foregoing patents suggests the idea of welding together at any point in their contacting surfaces two plane thin sheets of metal or of any way of manipulating the pieces to be welded or the welding instrumentalities so as to carry out that idea.

It is not contended, as we understand the defendant's position, that any single patent of the prior art anticipates Harmatta's invention (Dyer, Vol. I, p. 592, X-Q. 110). but the defendant's argument is that although Harmatta's spot welding was in fact absolutely new with him, the state of the art was such that no invention was required, and that a man skilled in the art needed no aid of an inventor to give the world this extraordinarily important and far reaching improvement in electric welding which takes the place of riveting in sheet metal work.

The best answer to this contention is the plain fact that no one prior to the date of Harmatta's application did practice that invention, large and important as was the field open for it. (The abandoned experiments of Rietzel and the alleged prior use by McBerty have, as we shall show, no anticipatory effect whatsoever.)

The facts established by this record are that in 1886 Thomson invented electric welding as disclosed in his patents No. 347,140 and No. 347,141. Thereafter this brilliant inventor, and others exercised their ingenuity and invention in efforts to apply the broad process of electric welding to many kinds of articles and to many arrangements of articles, but they all followed the specific application of electric welding which Thomson had invented in 1886, namely *butt welding* and variants thereof, and not one of them suggested the idea or solved the problem, or even attempted to solve the problem, of uniting by electric welding two plane sheets of metal at any point or

spot however remote from their edges, thereby obtaining a practical substitute for a rivet.

Harmatta was the first to solve this problem, which he did by the process of the patent in suit which has methods of operation which are the antitheses of those of the processes prior to his invention.

Harmatta's invention was based on the broadly novel idea of welding together two thin plane sheets of metal at any spot in their meeting faces. No one had ever before thought of doing that by any method.

Harmatta's invention marked an epoch in the art of electric welding and opened the tremendously wide and valuable field of uniting by electric welds two sheets of metal at any point in their contacting surfaces. The process has gone into the widest possible use in the manufacture of all kinds of sheet metal articles. The defendant has used it and cannot deny its utility.

Under these circumstances it would seem hardly credible that the practice of the Harmatta process was, prior to his date of invention so far suggested by the patents and practice of the prior art that the man skilled in the art without the exercise of invention would be naturally led to practice this new and immensely valuable process. He certainly did not do so.

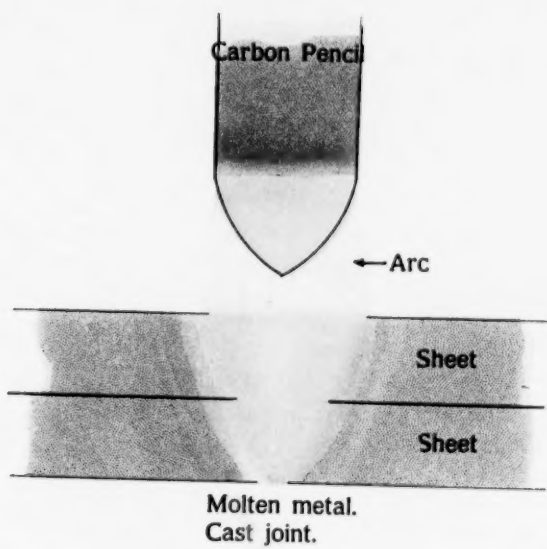
The undisputed facts therefore indicate most emphatically that Harmatta made a real invention, a real advance in the art of electric welding which was patentable under the laws of the United States.

The Court of Appeals for the First Circuit, appreciating these facts, has found that the Harmatta patent is valid. Vol. I, p. 4. We confidently submit that this Court will see no reason to depart from the conclusion reached by that Court of Appeals although a majority of the Court of Appeals for the Sixth Circuit took the opposite view in this case.



BERNARDOS No. 363,320.
HEATING BY ELECTRIC ARC.

NO PRESSING.



BENARDOS PATENT No. 363,320, MAY 17, 1887

(Vol. II, p. 1030).

This patent does not describe electric welding (Gravell, Vol. I, p. 151). It describes *an electric arc process of melting metals*, which can be used for melting together parts of two metal plates. As shown in Fig. 2, one of the terminals of an electric circuit is connected to the plate τ , which lies upon the plate τ^1 . The other terminal is connected to a carbon pencil D. The patent states (p. 1, lines 87-93):—

“When the carbon D, under these conditions, is brought into proximity to the metal to be operated on, the voltaic arc will be produced between the two, with the effect of heating, softening, and finally *melting* the metal at the point where the arc meets it.”

That is, the metal is melted from the back of the superimposed plate down through the two plates until the metal runs together and a cast metal joint is made. The same effect could be produced by an ordinary blow-pipe or plumber's torch acting upon the back of the sheets of metal laid together. *The metals are not welded*, because they are melted and there is no pressure applied to the sheets in contact. Welding requires pressure as well as heat. Pressure is an essential characteristic of the Harmatta process. These melting or fusing processes are not welding.

No one would ever think of trying to attach two sheets of metal together on their faces by this electric arc process, because the metal is necessarily melted, whereby the quality of the metal is destroyed and a hole is or may be made, and the backs or outside surfaces of the sheets are damaged and roughened by the flowing of the metal. The Benardos process begins by heating on the back surface of

one of the sheets. The characteristic of electric welding is the opposite, namely, that the heating is in the metal itself at the joint between the sheets.

In the accompanying drawing we have illustrated the electric arc process of Benardos. The arc between the pencil electrode and the metal sheet is of very high temperature and melts that portion of the sheet adjacent to it. The high heat is indicated by the yellow.

This Benardos patent, therefore, bears no resemblance whatever to the Harmatta process or product. The Benardos process is disclaimed in the Harmatta patent as follows (p. 1, lines 64-69):—

“I-disclaim those processes of fastening pieces of metal together in which the parts are heated and practically melted down by an electric arc generated on the back of the piece by ‘drawing’ an arc by means of the electrode.”

GERMAN PATENT TO BENARDOS No. 50,909, OF 1890
(Drawings Vol. II, p. 1151, Translation, Vol. I, p. 423).

Following the quotation just made from the Harmatta patent, Harmatta continues and says that he also disclaims (p. 1, line 70)—

“other processes in which the welding heat is generated externally and electrically in a resistance material and is imparted to the work by heat conduction from said resistance material in contact with the work.”

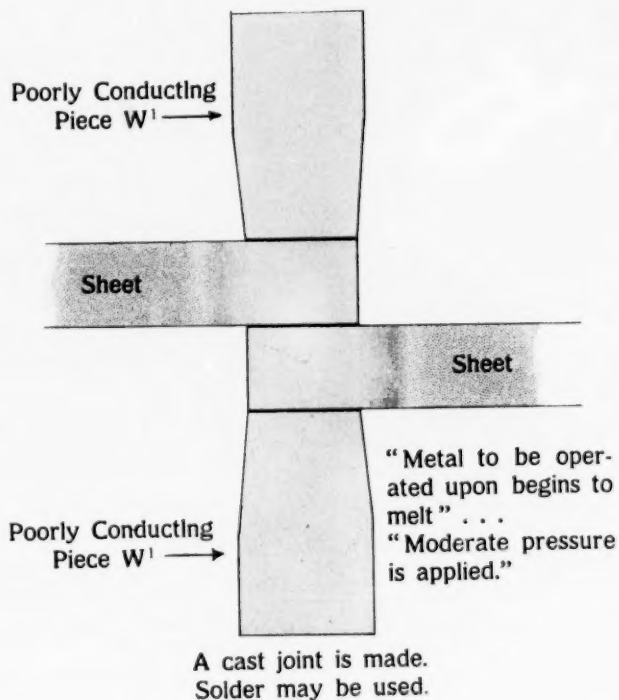
This is the process of the German patent to Benardos of 1890 (Gravell, Vol. I, p. 155).

Fig. 1 of this patent is typical. It shows one terminal of an electric circuit at the plate A^1 , which is superimposed upon the plate A , the edges of the plates overlapping. The other terminal is connected by a suitable handle to a piece of resistance material w , which is described in the patent



BERNARDOS GERMAN No. 50.909 — 1889.

HOT RESISTOR HEATING.



as "a small piece *w* of fire resisting, poorly conductive material". This handle and the piece *w* constitute a "soldering iron". When the current is turned on, the conductor *w* "soon begins to glow".

The process is described in the patent (Vol. I, p. 424, lines 10-17):—

"By cutting resistance out of the circuit with the aid of a rheostat C, Fig. 1, *the temperature of the piece w is raised until the metal to be operated upon begins to melt.* Then, while moderate pressure is applied, either the electric soldering iron is moved along the seam to be produced, or else the metal piece to be operated upon is moved along under the stationary soldering iron. When the operation has been completed, the current is interrupted by a switch and then the soldering iron is removed from the metal."

The process of this German Benardos patent is not electric welding, but is fusing by electric heating, and differs from the United States Benardos patent No. 363,320, above discussed, in applying the heat by means of highly heated resistance pieces *w* applied to the backs of the metal sheets to be fastened together instead of by means of an electric arc.

In the accompanying drawing we have illustrated this heating process of the Benardos German patent. The current is conducted through one piece W^1 , through the overlap of the sheets and through the other piece W^1 ; the supply wires are not shown in the drawing. The heat is created in the resistance pieces W^1 by their resistance to the passage of the electric current and is conducted from these pieces to the work.

The German patent distinguishes the process therein described equally from the electric arc welding process of the United States Benardos patent and from the electric

welding process of Thomson, saying (Vol. I, p. 423, 3d paragraph):—

“This process is clearly distinguished, both from the point of view of the inventive idea on which it is based and from that of its mode of operation, from the prior Benardos process of working metals by the direct employment of the electric arc, as well as from the electric welding process of Elihu Thomson.”

The Benardos patents, both United States and German, do not relate to electric welding. They contain no suggestion of the idea of making a weld at a spot between two contacting pieces of metal that can take the place of a rivet. These patents are not pertinent to Harmatta's invention.

COFFIN PATENT No. 437,571, SEPTEMBER 30, 1890
(Vol. II, p. 1045).

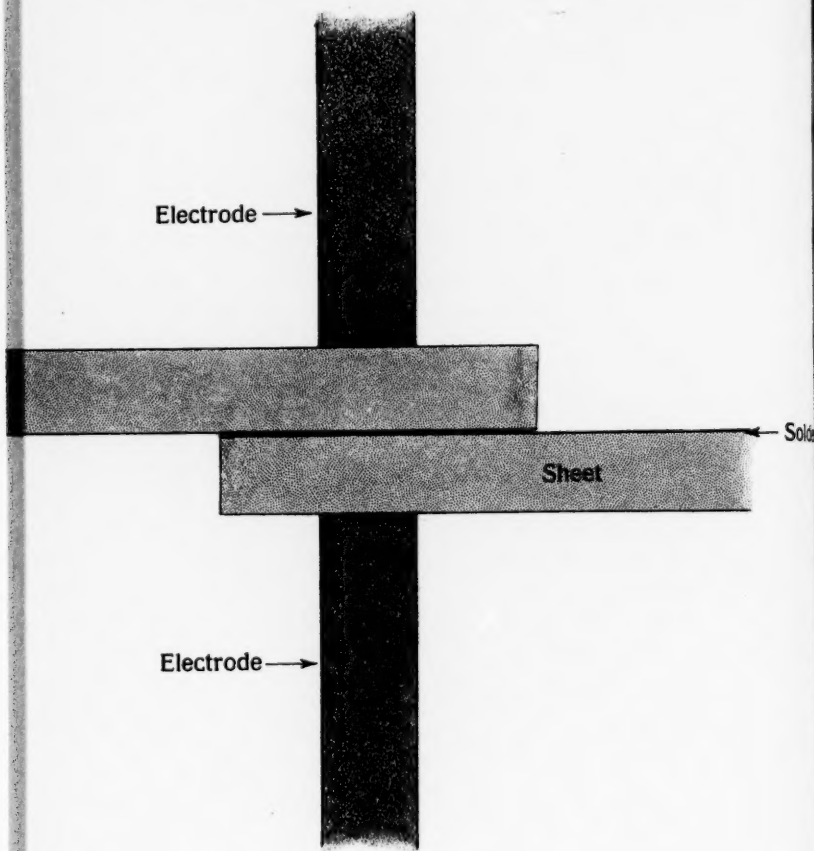
This patent does not describe a method of electric welding (Gravell, Vol. I, p. 154). It describes a method of heating the ends of two abutting rods held between two anvil blocks of carbon D, D' by passing currents of electricity through the rods and through one of the carbon blocks. The idea is to heat the ends of the rods without passing the current directly from one rod to the other. Coffin's object was apparently to avoid the butt-welding process of Thomson in which the current is passed directly from one rod to the other.

There is nothing in this Coffin patent that has any significance, even the most remote, to Harmatta's invention of spot welding.



THOMSON No. 496,019.

ELECTRIC SOLDERING. LOW HEAT. MODERATE PRESSURE.



THOMSON SOLDERING PATENT No. 496,019, APRIL 25, 1893
(Vol. II, p. 1053).

This patent is *not for electric welding* but for "Electric Soldering" (Gravell, Vol. I, p. 156). As the patent states (p. 1, lines 16-23):—

"My invention consists in clamping or pressing the pieces together at the seam or joint, passing an electric current through either or both of the pieces to be joined, and in sufficient volume to *melt the solder* or uniting metal, cutting off the heating electric current, and maintaining the pressure until the joint is sufficiently cool."

The accompanying drawing illustrates this Thomson soldering process. The electric current flowing from one electrode to the other through the sheets heats them to a comparatively low temperature at which the solder (green) between the sheets melts. When the current is turned off the solder solidifies and thereby unites the two sheets. The solder does not form a weld but is simply a cement or metallic glue for sticking the two sheets together. There is no pressure involved, as in welding, but the sheets are simply held in position while the solder cools and solders them together. When the process is applied to tin plates the tin on the surface of the plate may form the solder (p. 1, lines 12-16).

There is no electric welding and no isolated spot weld is formed. There is no suggestion that two sheets of metal can be electrically *welded* together at isolated spots.

As shown in Figs. 1 and 2, the overlapped edges of two sheets to be soldered together are held between the large electrodes C and C' and the solder is melted between their entire areas in contact.

Fig. 3 shows a double lap joint, the parts of which are soldered together.

Figs. 4, 5 and 6 show the soldering together of a round plate P "struck up into form" (p. 2, line 30) and a ring piece P¹ with one edge turned in. The pieces are forced together by the blocks C, C¹ "which may be of iron or other metal" (p. 2, line 37), but Thomson prefers to "face them with a facing such as hard carbon" (p. 2, line 41) in order to concentrate the heat. The facing with hard carbon is shown in black in Fig. 7. This is the same idea as in the Benardos German patent already discussed, namely that of heating the sheets from their backs by means of hot resistance pieces.

Thomson developed the idea further, as shown in Figs. 8 to 17, wherein the ends F of the pressure pieces are provided with small projections, the patent stating:—

"In all these cases the conduction of heat away from the pieces held between the blocks is greatly checked by the form given to the surfaces as described, and the resistance to the passage of current at the work is increased which in itself results in further production of heat at the sheet metal pieces where pressed up together between the conducting blocks C, C¹." (Page 2, lines 76-85.)

Obviously the heat generated by the small projections and conducted to the work is applied to the back of the pieces to be soldered and would pass through the sheets and melt the solder wherever the heat was great enough. There is no idea here of an isolated spot weld or even of an isolated spot of solder.

Fig. 19 of the Thomson patent shows the pieces P, P¹ rolled together between rollers C², C³, the peripheries of which are grooved as shown in Fig. 20.

Figs. 21 and 22 show a gang soldering machine operating

upon many pieces "in a given time" (p. 2, line 118). A cam S on a shaft D forces down a rod C to clamp the pieces P between its lower end and the upper end of a rod C'. The continued downward movement of the rod C brings the lower end of the lower rod C' into contact with a terminal spring *a* which is connected to the conductor K¹ from the source of electric energy. The upper rod C slides against a spring contact piece connected to the conductor K. As the cam S continues its movement the springs on the rods lift the rods and break the contact between the lower rod and the spring terminal *a* thereby cutting off the current. The continued upward movement of the upper rod C, which is permitted by the cam S, lifts that rod from the soldered pieces P.

There is nothing in this mechanism or mode of operation in the least degree suggestive of spot welding. The solder between the pieces is undoubtedly spread over the entire area of contact of the pieces and would not even form a spot of solder. The electric conductors or electrodes C, C' are straight sided rods which would serve neither to carry a current large enough for welding nor to concentrate it at the ends of the rods to a path between those ends only, as are the functions of the taper ended electrodes of Harmatta's invention. Such straight sided electrodes as are shown in this Thomson patent might be suitable for electric soldering but they would be utterly useless for electric welding.

Furthermore the electric contacts for closing the circuit would be unable to carry the heavy current necessary for electric welding.

This Thomson patent does not even teach the art how to make a soldered joint except throughout the area of contact of the pieces to be soldered. Even therefore if the arts of soldering and welding were in the least analogous, which they are not, this Thomson patent would be in no

way suggestive of Harmatta's idea of making a spot weld between the contacting surfaces of two plane sheets in extended indiscriminate facial contact.

This Thomson patent discloses only soldering operations. It contains no thought or suggestion that such a weld might be made at any place between two such plane sheets.

It offers no solution of the problem of how to concentrate a welding current at a spot in the meeting surfaces of two plane sheets in extended facial contact.

It offers no solution of the problem of how to apply pressure as is necessary in welding to complete the weld between two such sheets.

While soldering and welding both require the application of heat to the metals being treated they are in other respects in no way alike. Welding results in an autogenous union of the two metal sheets. Soldering results in the mere metallic gluing together of the pieces.

Welding requires a current sufficient to raise the parts to be welded to a temperature of 2400° F. Soldering requires a current sufficient to raise such parts only to a temperature of 400° F (Dyer, Vol. I, p. 599). The manipulation of a welding current for spot welding presents a very different problem from the manipulation of a soldering current. The former requires increased resistance at the welding point, provided by a marked reduction of the cross-sectional area of the work at that point as in the art prior to Harmatta, or provided by tapered electrodes as in the Harmatta process.

The soldering current requires no such concentration of resistance or concentration of current.

In the Harmatta process the ends of the electrodes, although small in area, are not the source (except as carriers of the welding current) of the welding heat which is generated at the joint between the work. In the Thomson soldering process in most of the figures of the

patent illustrating that process the ends of the electrodes are faced with carbon or are grooved or corrugated so that those ends shall offer material resistance to the current and become heated and thereby heat the work. This is the antithesis of Harmatta's idea of creating a welding heat solely at the joint between the two pieces to be welded.

In the electric soldering of the Thomson patent there is nothing in any way resembling Harmatta's method of applying pressure solely to the opposite sides of the spot to be welded. In Thomson the sheets or plates are not heated highly enough to make them soft and therefore the application of such pressure as is needed for soldering at most merely pushes those sheets bodily towards one another, if that can be done, by squeezing out some of the solder between the sheets.

The Thomson patent does not involve or suggest Harmatta's idea of completing a spot weld by pressing firmly but slightly on the softened metal on each side of the spot to be welded without the bodily movement of the sheets themselves.

This Thomson soldering patent No. 496,019 contains no suggestion of the electrode spot welding process of the Harmatta patent. Ten years elapsed from its date of issue in 1893 before Harmatta, who was the first to do so, thought of the electrode spot welding process.

BLANCHARD PATENT No. 466,266, DECEMBER 29, 1891
(Vol. II, p. 1051).

This patent does not describe a process of electric welding or even of uniting two pieces of metal. It is for an "electric heating tool" consisting of a pair of pincers, the ends of which are provided with electrodes *b, b*, between which the article to be heated, such as a rivet, is grasped. An electric current is then passed from one electrode to

the other through the article and thereby the article is heated.

This patent has no conceivable relevancy to the Harmatta patent in suit (Gravell, Vol. I, p. 158).

LEMP PATENT No. 531,197, DECEMBER 18, 1894
(Vol. II, p. 1058).

This patent is not for electric welding (Gravell, Vol. I, p. 159), or even for uniting two pieces of metal. It is for a "method of producing locally annealed steel plates" and shows a process of passing an electric current through a single steel plate at a place which it is desired to soften or anneal in the hardened plate. The current does not cross a joint between two plates or sheets.

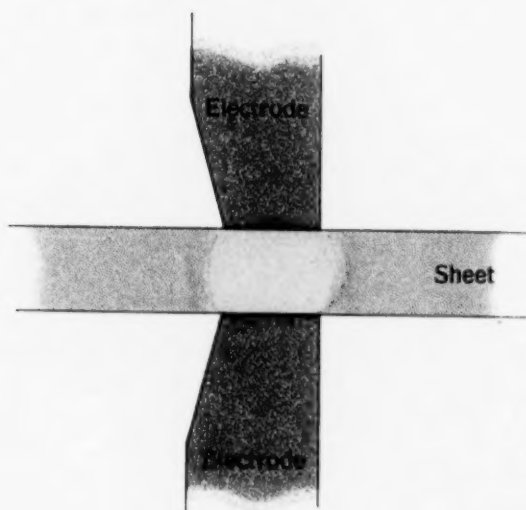
The process has nothing whatever to do with electric welding, as no weld is attempted to be made, and is merely a specific example of the old process of heating an article by passing a current of electricity through it. It is entirely immaterial that in some cases the electrodes employed by Lemp are pointed, as for example in Fig. 4, because there is no suggestion or hint by Lemp that by such means an electric weld could be made between two thin sheets of metal in contact with one another. There is no hint of Harmatta's idea in this Lemp process.

The process is illustrated in the accompanying drawing. The part colored red is that heated and softened.

BURTON PATENT No. 647,694, APRIL 17, 1900
(Vol. II, p. 1079).

This patent (Gravell, Vol. I, p. 161) is not for electric welding but for an "Electric Metal Working Apparatus" and shows means for electrically *heating* the ends of rods and other articles by means of passing electric current therethrough *so that they can be afterwards hammered together on a blacksmith's anvil*, which is illustrated at 110 in Fig. 1 of the Burton patent. As the patent states:

LEMP No. 531,197.
LOCAL ANNEALING.



No Welding.

No Pressure.



"The object of the invention is to provide a simple, convenient and compact apparatus for the use of a blacksmith or other metal-worker." (Page 1, lines 22-25.)

According to the described process, electrodes of various shapes are pressed against opposite sides of the work and a current is passed from one electrode to the other through the work, thereby heating it to welding temperature. In all cases where there are two pieces of metal or two ends of a ring or other kinds of pieces to be welded together, *the pieces of metal or the ends of the work are shown separated from one another and not as being pressed together by the electrodes.* The current does not cross the joint between the two pieces but divides and passes through the end of each piece separately. It merely heats the ends of the pieces, and there is no suggestion of forming a weld by pressing the work together by means of the electrodes. On the contrary, the patent states:—

"As soon as the piece is heated to the proper temperature, which may be ascertained by inspection thereof, the operator releases the foot-lever and the spring 170 lifts the hinged lever 150 and takes the upper electrode out of contact with the work, whereby the circuit is broken. Then the operator may shove the work forward on the anvil and hammer the joint or otherwise finish it, as desired." (Burton patent, p. 2, lines 78-87.)

The release of the pressure when the work gets hot is the antithesis of the Harmatta process in which pressure is applied at that moment to make the weld.

The Burton process of heating is illustrated in the accompanying drawing. The ends of the work, which are slightly separated from one another, both rest upon the lower or bed electrode and are clamped thereto by the

upper electrode, which also is in contact with both ends. The current flows from one electrode to the other in two paths, one in each end of the work, and heats those ends to a welding temperature as shown in yellow. The patent describes no means for welding the two ends thus heated, but it suggests, as above quoted, that they may be removed to an ordinary anvil and hammered together. The Burton patent does not describe electric welding.

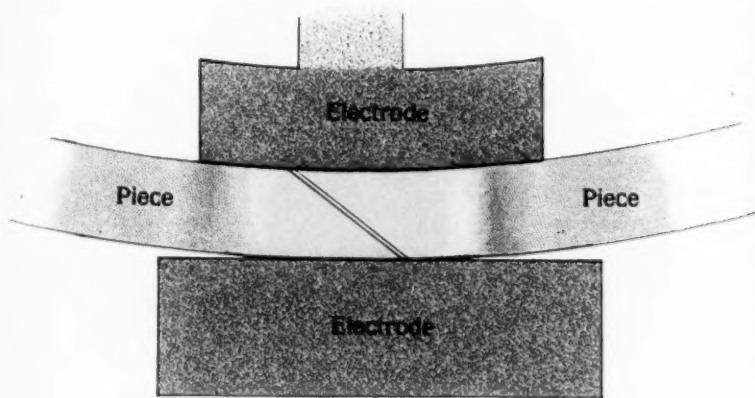
It is entirely immaterial that among the tools shown on the electrode head 200, there is illustrated a tool with spherical end 240 and a tool with a pointed end 250. There is no description whatsoever in the patent as to how these tools are to be used and no suggestion whatever that they could be used for making a spot weld or a weld of any kind. Figs. 3 and 4 show the use of the pointed tool entering a hole in a single sheet as if to spread and taper its mouth. Undoubtedly the spherical tool was intended for use for a similar purpose, which is not welding at all. In fact, as we have already pointed out, Burton's idea was merely to heat articles some of which were afterwards to be welded by the blacksmith on his anvil.

If either the pointed electrode or the spherical electrode were used in connection with the overlapped ends of the work they would not produce a weld even if the ends of the work, contrary to Burton's showing and expressed purpose, were in contact. The reason is that the end of the pointed or spherical electrode could contact with one end only of the work and as that end is also in contact with the bed electrode 100, the current, which follows the shortest and easiest path, would pass through that end only and would not cross the joint between the ends of the work and would not heat the other end. Therefore no weld could possibly result.

Even if the point of the pointed electrode or of the spherical electrode were placed precisely on the crack of

BURTON No. 647,694.

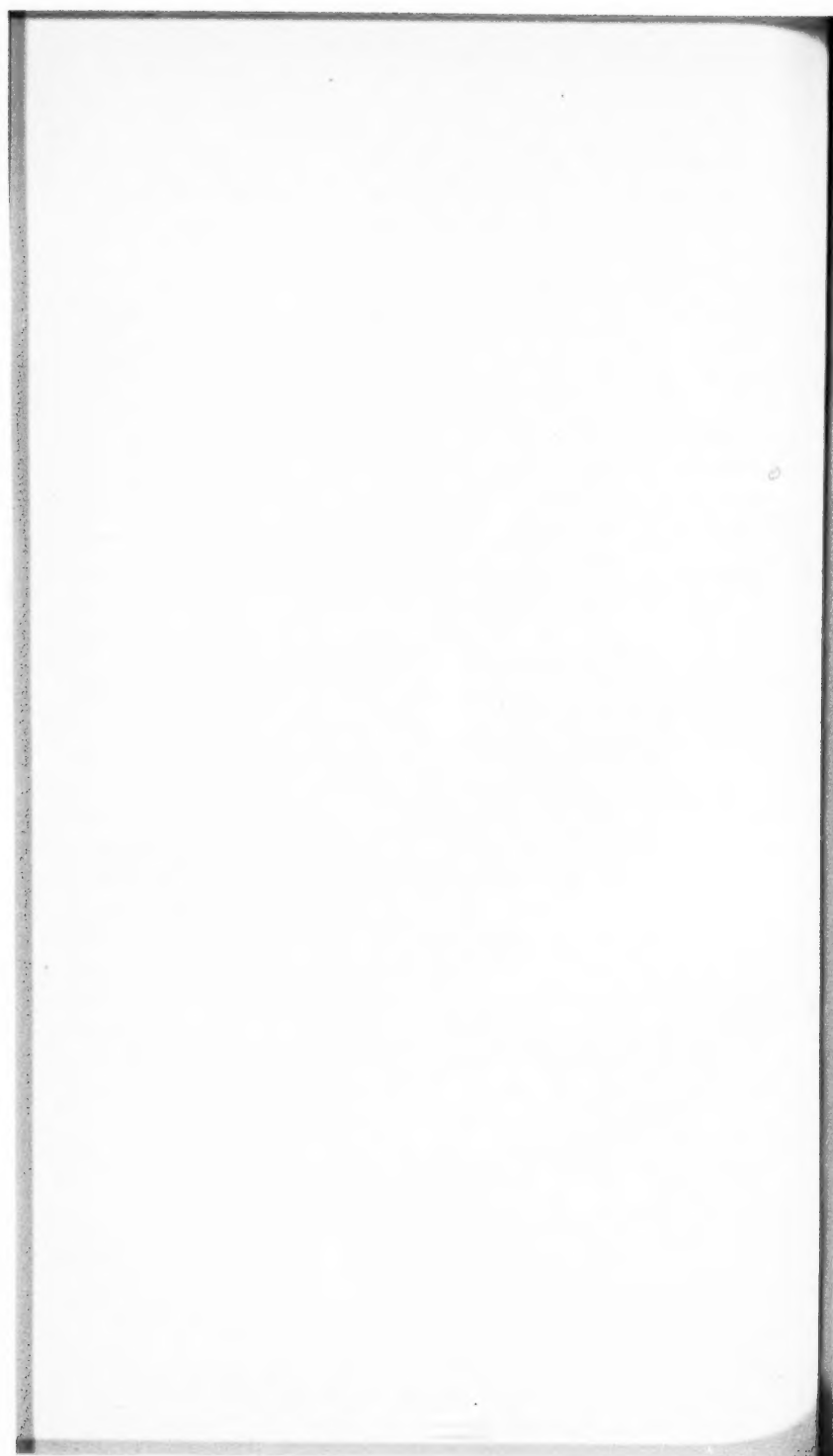
HEATING.



Ends of pieces are
separated, i. e., not
in contact.

Current traverses end of each piece separately; it does not
cross the joint.

Pieces heated are removed to an anvil, and there welded
by hand.



the joint between the ends of the work (which Burton does not describe or suggest), no weld would result because the current would split and pass in two branches, one through each end of the work to the bed electrode 100 on which both ends lie in contact as in the cases of the use of the large electrodes shown by Burton.

Moreover, the Burton patent does not describe or even suggest the application of pressure by the apparatus for the purpose of welding.

There is in the patent no disclosure or suggestion of spot welding. This patent was set up in the answer in the Barney & Berry case in the First Circuit, but was not thought of sufficient consequence to be discussed by the defendant's experts in that case. It has remained for the ingenuity of Mr. Dyer, defendant's expert in this case, to suggest reading into the Burton patent a description or suggestion of spot welding. No one, not even Burton himself, had thought of this before. There is no foundation for Mr. Dyer's suggestion.

THOMSON RIVETING PATENT No. 396,015, JANUARY 8, 1889 (Vol. II. p. 1037).

The patent (Gravell, Vol. I, p. 165) is not for electric welding but for a method of "electric riveting". It describes *the heating of a rivet* by passing an electric current therethrough between the anvil E¹ and the plunger G, which are in contact with the ends of the rivet and are the rivet setting tools. The rivet is headed by squeezing the rivet between the anvil and the plunger.

Another idea developed in this Thomson patent is that of partially welding the rivet to the sides of the hole. To accomplish this Thomson maintains the electric current through the rivet long enough to heat it highly so that enough heat is *conducted* from the rivet to the sides of the

rivet hole to raise the contacting metal to welding temperature. Then when the rivet is compressed and headed it is partially welded to the metal at the sides of the hole.

Concerning this operation the patent states:—

“A valuable effect, (illustrated in Fig. 6) not possible in other processes, may be obtained in my method of riveting by continuing the heating on the rivet-blank placed in the hole for some moments longer than is necessary to raise it to a softening temperature. *By conduction* the heat is carried to the portions of the plate surrounding the rivet, raising such portions to a welding temperature, and when the rivet is pushed firmly into the hole *a partial welding of the rivet to the sides of the hole is effected*, thus forming practically solid metal for a portion of the distance from d to d^1 .” (Page 2, lines 28-41.)

Thomson recognized that the squashing of the rivet between the anvil and the plunger would tend to separate the plates, and therefore provided clamps K, K¹ for holding the plates together, as shown in Fig. 9. The body of the clamp K is screw-threaded in the support B¹ so that the clamp may be screwed down onto the plates. Thomson provides mica pieces m , m^1 between the ends of the clamps and the plates in order to insulate the clamps from the plates. He, however, states that these mica pieces may be dispensed with and that part of the current of electricity may flow through the plates from one clamp to the other. The purpose of this is merely to assist the heating of the rivet and the parts of the plates in contact with it. Of this the patent states:—

“By the use of this form of apparatus a heating electric current might be passed through the metal plates themselves at parts around the rivet by means of the pressure pieces or clamps K, K¹. Such current

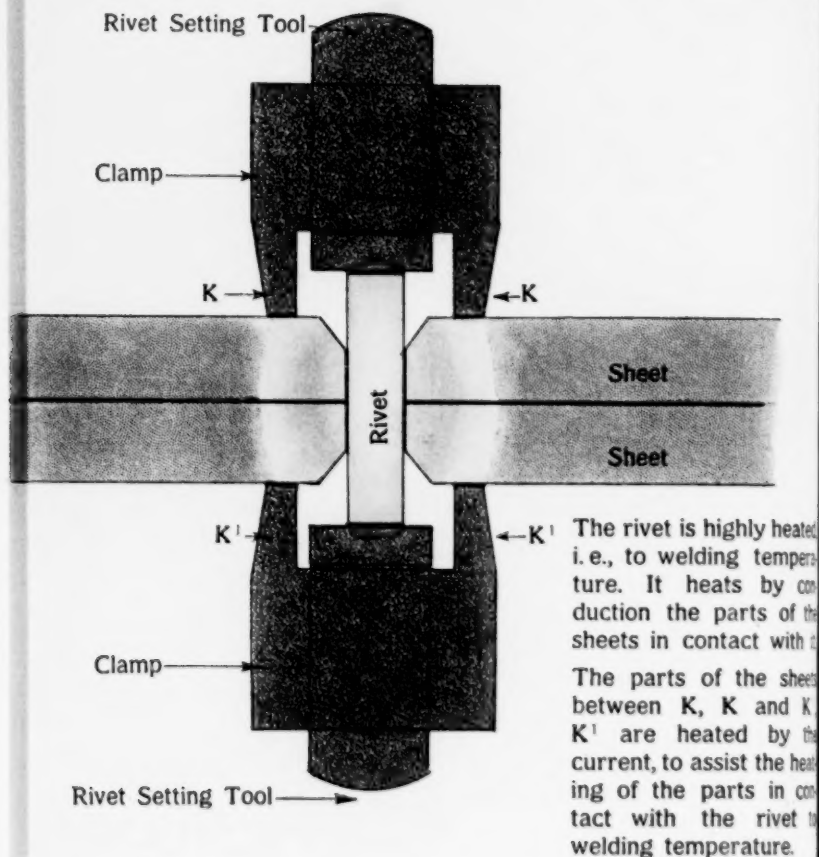
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THOMSON No. 396,015.

ELECTRIC RIVETING.

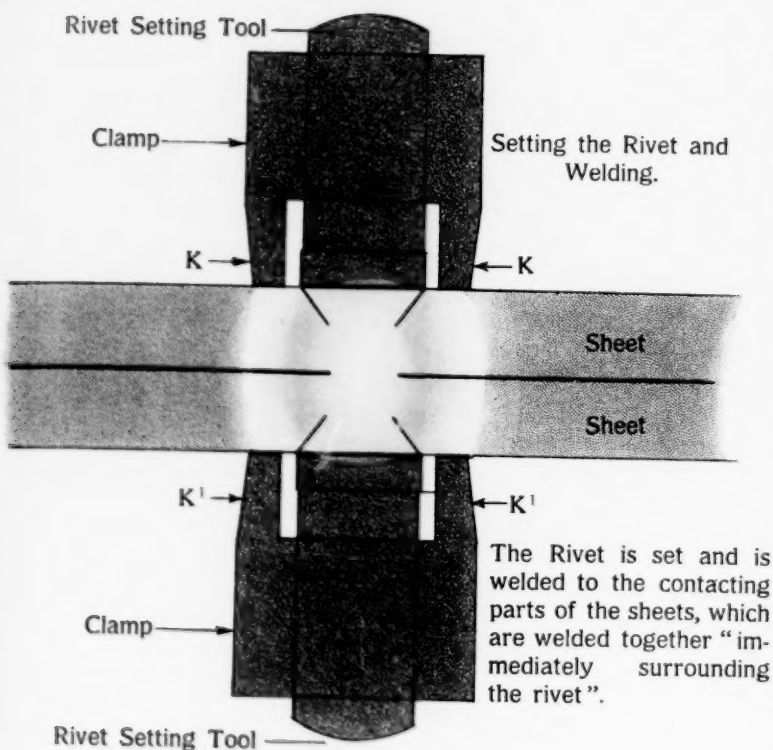
HEATING.



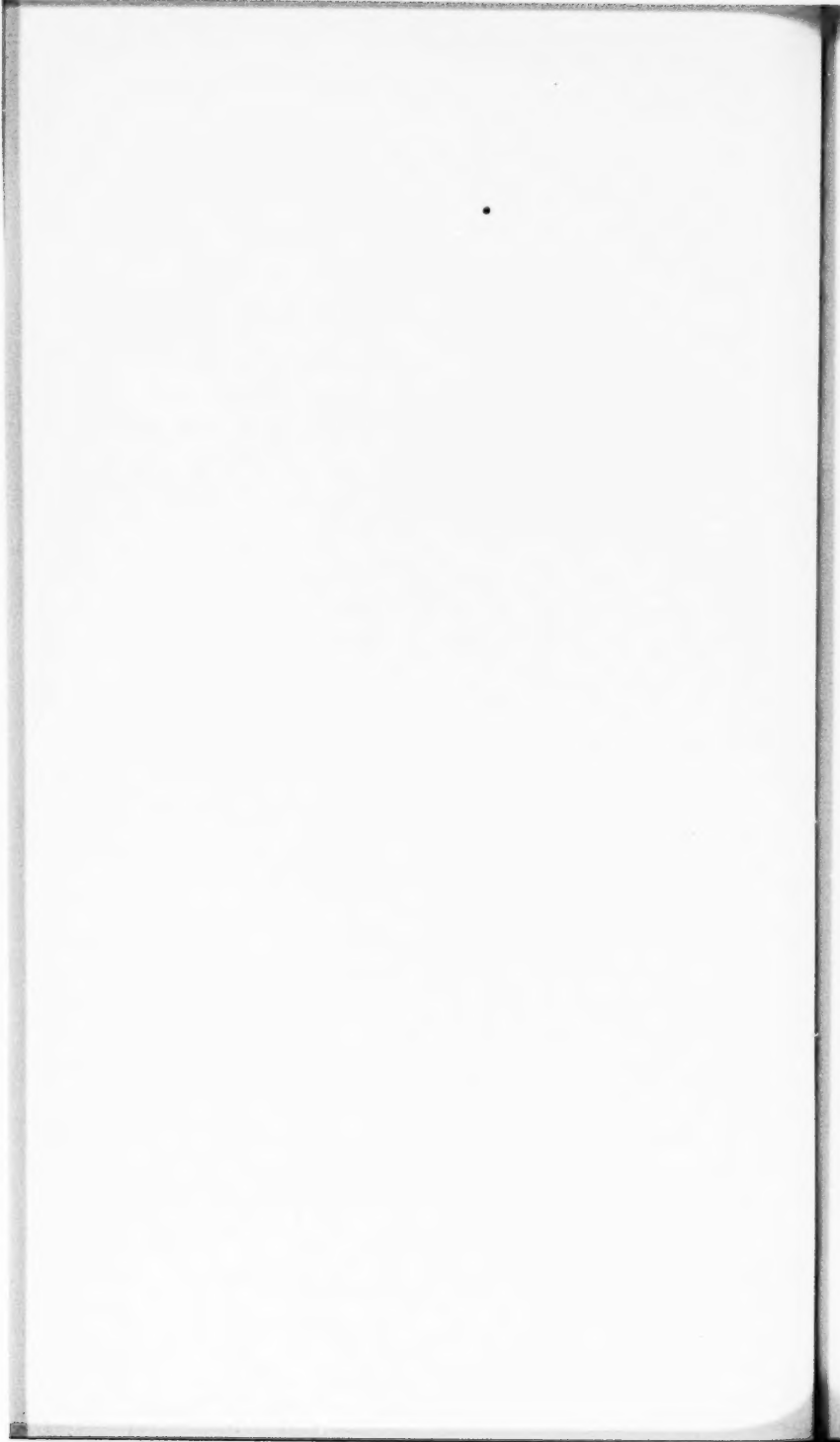
THOMSON No. 396,015.

ELECTRIC RIVETING.

PRESSING.



No welding pressure is applied to the clamps.



would assist in raising the portion of the plates *immediately surrounding the rivet* to the welding temperature; but the prime object is that through the application of the pressure the plates themselves may be held together during the riveting. The blocks K^1 , K may therefore be faced with mica or other insulator, m , m^1 ." (Page 2, lines 68-80.)

We have illustrated in the accompanying drawings the operation of welding the rivet to the metal at the sides of the hole while the plates are held firmly against one another by means of the clamps, in which operation part of the current flows from one clamp to the other.

The first drawing shows the heating effect by which the current passing through the rivet and overcoming the resistance thereof raises the rivet to a high temperature, as shown in yellow. The heat of the rivet is conducted to the metal at the sides of the hole, also shown in yellow. The current flowing between the clamps heats the metal at a short distance from the rivet, as shown in red, and this heat acts to assist the heating of the rivet and of the sides of the rivet hole, as Thomson points out.

Our second drawing shows the heading of the rivet. In this case the heads of the rivet are set into the countersunk holes in the plates and the body of the rivet, which tends to squash out sidewise under the riveting pressure, is welded to the metal at the sides of the hole.

Professor Thomson in his affidavit filed in connection with the Rietzel application accurately states of this process (Vol. III, p. 1786):—

"My prior patent No. 396,015 discloses the use of rivets and makes mention of welding but the only possible welding that could be produced by that process would be possibly some sticking of the edge of the perforation in the metal sheet to the side of the

rivet which is a mere incident of the invention and there is no welding of the superposed plane surfaces or opposed faces of the plates to one another by welds disposed over such plane faces."

Mr. Dyer, defendant's expert, seems to think that this Thomson patent in some way foreshadows Harmatta's invention. Inasmuch as *Thomson's idea was to insert a rivet to unite two sheets of metal and Harmatta's idea was to avoid the use of a rivet* and to unite such two sheets by means of a spot weld between the two sheets of metal, it is difficult to imagine two processes which could be more fundamentally antithetical to one another. Thomson had no idea whatever of any process in which a rivet could be dispensed with. *To dispense with a rivet was the fundamental thought of Harmatta.*

The defendant's suggestion, that by some totally unauthorized manipulations of the apparatus shown in the Thomson patent a spot weld might be made, are entirely irrelevant. This suggestion is based upon the supposed effect of the clamping devices K and K' of Fig. 9 if arranged and operated in a manner for which there is no warrant in the Thomson patent. Defendant's idea is that if these clamps were placed directly against the plates, after removing the insulation pieces *m*, *m*¹, and *if* their respective clamping points came opposite to one another, and *if* the right current of electricity were passed from one set of clamping points K through the work to the other set of clamping points K', there would be spot welds between the plates in their meeting surfaces at the spots in line with the opposed clamping points.

There is no hint of any arrangement or operation of this sort in the patent. Electrically the proposition is entirely unsound. When the pieces of mica *m*, *m* are removed it would be necessary to set up the screw clamp

S' to clamp the work between the arms K, K'. This turning of the screw would throw the clamping arms out of alignment and hence would prohibit the making of spot welds as suggested by Mr. Dyer. There is, moreover, no suggestion whatever in the Thomson patent that during the process the clamping arms are moved towards one another, hence *the pressure necessary for making a weld in line with the clamping arms (even if they were in line) would be lacking.* The only parts that are moved in the process of this Thomson patent are the electrode riveting tools G, G' which abut against the ends of the rivet. They are moved by the screws X, X' to set the rivet. The patent does not suggest that welds between and in line with the clamps might be made and none in fact could be made.

The uniting of the sheets and the rivet together by this Thomson process is not electric welding in any sense, because the heating of the plates is accomplished entirely by conduction of the heat from the heated rivet and not by the passage of current through the sheets as in electric welding.

The process further differs from that of the Harmatta patent in suit in the employment of a rivet as an essential instrumentality in the process which it was the object of Harmatta to dispense with, substituting therefor a spot weld. This Thomson process does not result in a spot weld and is not in any sense the process of the Harmatta patent in suit.

No one of the foregoing prior patents is for an electric welding process.

We now come to the patents on electric welding processes. No one of them even approaches the problem, solved by Harmatta, of welding together two thin sheets of metal *at any spot* in their meeting faces. That was a new idea first introduced into the art of welding by Harmatta.

THOMSON PATENTS Nos. 347,140 AND 347,141 of 1886
(Vol. II, pp. 1021, 1026).

These Thomson patents show and describe for the first time the process of electric welding, but they disclose only how it may be applied to joining together the *butt ends* of two metallic rods by passing an electric current of low voltage and high amperage from one rod to the other and pressing the two rods together. This specific process was of great value and went into commercial use, where the process became known as "Butt Welding".

We have fully discussed these patents *supra*, pp. 6-8.

THOMSON ROLLER LAP WELDING PATENT No. 444,928,
JANUARY 20, 1891 (Vol. II, p. 1047).

Of the many patents in the prior art to which defendant has called attention this Thomson patent for roller lap welding is the one which has been especially emphasized.

In the suit of *Thomson Electric Welding Company v. Barney & Berry*, brought on the Harmatta patent in the United States District Court for the District of Massachusetts, particular reliance was placed on this Thomson roller patent by Judge Dodge in the District Court who found the Harmatta patent invalid for lack of patentable quality. The opinion of Judge Dodge is reported in 227 Fed. 428-433, see especially page 431.

The Court of Appeals for the First Circuit in finding the Harmatta patent valid and reversing the decree of the District Court also carefully considered this Thomson roller patent, saying 227 Fed. 435:

"Returning to the defenses based on the roller electrode process, or other processes devised with reference to overlapping sheets, it is all too plain that neither in its practical operation nor in its result was there any resemblance to the spot welding such as to require discussion."

The majority opinion of the Circuit Court of Appeals for the Sixth Circuit in the case at bar lays particular stress on this Thomson roller welding patent as part of the prior art which the court regarded as negating patentable invention by Harmatta. (Vol. III, pp. 2099, 2100).

The reason why this Thomson lap welding roller patent has attracted more attention than any other item of the prior art is clear. It alone of the disclosures of the prior art relates at all to the welding of plane flat sheets of metal and it is with the welding of plane flat sheets of metal that the Harmatta patent deals. But the resemblance between the two inventions begins and ends with this single and immaterial circumstance. The Thomson roller patent No. 444,928 is an application of the fundamental Thomson invention of electric welding to the *continuous welding of lap welded plates at their edges*, which had been done before by other methods of welding. The Harmatta invention relates to the application of the same fundamental principle of electric welding to the *isolated union of two plane sheets in spots* wherever there may be occasion to unite them which had never been done before by any method of welding. It substitutes electrically welded spots for the rivets that had been invariably used for such a union. The Harmatta principle and method of operation and its result were in all respects novel and not in the slightest degree foreshadowed in the disclosures of the Thomson lap welding roller patent.

Thomson's roller process was designed and adapted only for welding the lapped edges of sheets. This had previously been done, as in lap-welded pipe for instance, by ordinary blacksmith methods in which the edges of the sheets could readily be heated at a forge or by a plumber's torch or otherwise, then overlapped and hammered or rolled together into an integral weld. There was no difficulty in doing this.

But this did not instruct any one how to make an isolated weld anywhere in the meeting faces of two sheets. The only method that we can think of for heating the parts of such sheets to be welded would be to apply a plumber's torch to the spot in each sheet separately. The heat could not be applied to the sheets when placed one on top of the other, because there would be no way of applying the heat to the meeting faces of the sheets. Heating them from the backs would be inadequate and would result in merely melting holes in the backs of the sheets as we have explained as to the United States and German Benardos patents (*supra*, pp. 23-24).

Then having thus heated by a plumber's torch the spots in the sheets to be welded, it would be necessary to place those sheets face to face in the exact position so that the heated spots would come against one another. While the sheets were being so placed the heat from the spots would be dissipated. So that if an attempt were then made to place the sheets on an anvil and hammer the spot, it would be suprising if the metal remained at welding temperature long enough for this hammering to be carried out. Moreover, the backs of the sheets being of relatively cold metal might not yield sufficiently to the blows of the hammer to force the heated spots together into a real weld.

The welding of overlapped edges of sheets whether by blacksmith methods or by electrical methods therefore taught no one how to make a weld at any point, however remote from their edges, in the meeting faces of two sheets in undetermined extended facial contact.

This Thomson lap welding roller patent (Gravell, Vol. I, p. 175) describes a proposed process of lap joint welding between two wide roller electrodes. As above stated, the contentions based upon it, adverse to Harmatta, have been considered in every proceeding in which the Harmatta patent has been involved.

The patent was cited against Harmatta's application and was fully considered by the Patent Office (Vol. II, p. 1380, etc.).

In fact the process of this Thomson patent is referred to in the Harmatta patent itself (Vol. I, p. 388) as follows:—

"It has also been proposed to make a lap joint between the ends of two strips of metal by electrically uniting them together over substantially the whole area of the lapping surfaces.

"A weld formed according to my invention is distinguished however from such prior welds, among other things, by the fact that the opposed surfaces available for uniting the pieces together and in which it might be possible to form a weld are welded in a small spot or spots only, the spot or spots being surrounded by comparatively large areas of opposed surfaces in which no weld is made." (Page 1, lines 42-56.)

The Thomson roller patent states:—

"My invention relates to a process of electric welding in which *the surfaces to be welded* are pressed together to form a union, and the heating of the surfaces to the desired plasticity is effected by means of an electric current passed across the joint or line of proposed union." (Page 1, lines 8-14.)

The process so far stated is merely the butt welding process of Thomson's basic patents in which *the surfaces to be welded* are heated and pressed together.

The Thomson roller patent continues:—

"My present invention relates more particularly to the process of joining or welding together strips, sheets, plates, or bars of metal where it is desirable to form a joint of considerable length, and is especially applicable to the welding of plates together at their edges, instead of riveting, to the welding of ribs or

strips of metals to plates for the purpose of strengthening the same, to the formation of pipes by welding a longitudinal joint, to the welding of half-round or other shaped strips on one or both sides of a plate or strip of metal, and to other similar classes of work, as will be obvious." (Page 1, lines 15-28.)

All these suggested applications are of the same class and the same character. They involve the same idea, of which the specific example, relied on as suggestive of the Harmatta invention is "the welding of plates together at their edges, instead of riveting". Thomson is merely seeking to substitute a long continuous weld between the overlapped edges of plates for a series of rivets. This is not at all Harmatta's idea of forming a single weld, which would take the place of a single rivet, *made anywhere* between the meeting faces of two sheets or plates in extended contact. Thomson welded only at the overlap of the edges of the two plates. He could not weld at any other point.

The Thomson patent further states:—

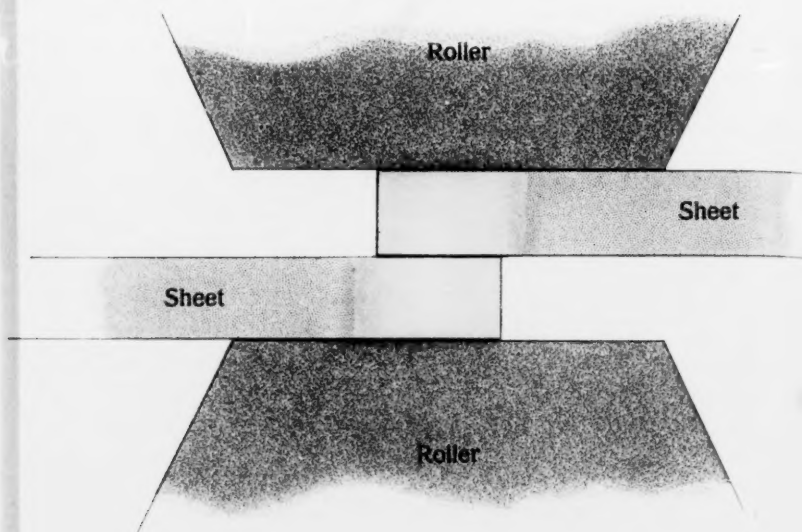
"My present invention consists, essentially, of forming *an elongated joint* by the electric welding process by feeding the work in the longitudinal direction of the joint through suitable pressure devices, *the work being properly arranged*, so that the pressure devices will press the surfaces to be welded together and simultaneously passing an electric current through the work at the point of pressure." (Page 1, lines 29-38.)

As shown in the drawings of the patent the work is "*properly arranged*" by overlapping the edges of the two sheets or plates, as in cross-section in Fig. 1. The work so arranged is placed between two rollers R and R¹, the latter being forced towards the roller R by the screw S, the patent stating:

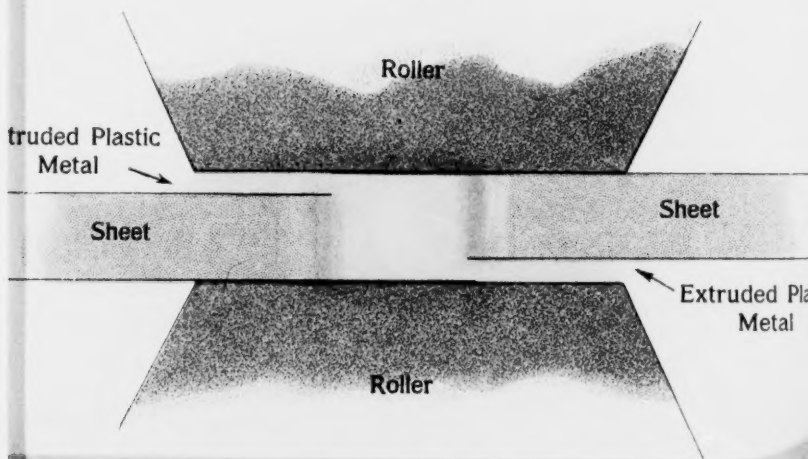


THOMSON No. 444,928.
ROLLER LAP-JOINT WELDING.

HEATING.



PRESSING.



"The edges of the two plates are slightly overlapped, as shown, and the plates, being in position between the rolls, may be squeezed together by means of the screw S, thus forming an electric contact between them." (Page 1, lines 85-88.)

The essence of this arrangement of the plates and the electrode rollers is that the heavy welding current passing through the heavy conducting cables C, C¹, through the frames F, F¹ and through the rolls R, R¹ has traversed a path of low resistance but when it reaches the work it is forced through the comparatively narrow path formed by the overlap of the work itself and because this overlap is narrow, being much less than the width of the rollers, the resistance of this path is high. Hence the heavy current meeting this high resistance in the narrow overlap of the plates heats the metal of that overlap to welding temperature. This condition is illustrated in the figure marked "Heating" in the accompanying drawing.

The Thomson patent states:—

"The electric current being now turned on as it passes from one roller to the other and across the point of pressure will heat the work to the welding temperature and soften the same slightly, after which the screw may be given a few more turns to effect a solid union." (Page 1, lines 88 to 95.)

The effect is illustrated in the figure marked "Pressing" in the accompanying drawing.

This is the same mode of operation which Thomson describes in his earlier basic patents, namely the contacting parts of the pieces to be welded (the overlap of the sheets or the ends of rods) are pressed together by large heavy electrodes. The current is forced across the narrow path provided by those contacting parts and there meets high resistance due to the limited cross section of those parts so that it heats those parts to welding temperature. Then

the pressure applied forces the pieces bodily together "to effect a solid union". All this was nothing but the method of the early Thomson patents applied to the welding of overlapped edges of sheets instead of to welding the butt ends of two rods. *In both cases the high resistance of the small cross-sectional path of the contacting parts of the pieces to be welded is what causes the current to create the heat necessary for welding.*

The Thomson roller patent then continues and describes the new feature of the roller process:—

"The work, having been thus started, may now be moved along through or between the rollers, so as to bring successive parts of the joint into position to be pressed and heated at the same time. By this operation the metal will become thoroughly united as it passes through and out from between the rolls." (Page 1, line 94, to p. 2, line 7.)

That is, the rollers, having been brought closer together than the combined thickness of the two sheets, perform a sort of drawing operation on the edges of the sheets by pressing them bodily together as the sheets are forced between the rollers.

In this way Thomson proposed to weld together the previously arranged overlapping edges of two metal sheets.

In the Thomson process, it is absolutely necessary to maintain the extent of the overlap exactly right all the time. If the overlap is too great, its resistance will be too small and the current will not heat the overlapped edges sufficiently and no weld will be made. If the overlap is too small, the resistance will be too great and the current will overheat the overlapped edges, perhaps melting or burning them. To keep the overlap uniform is "almost impossible in commercial work" (Gravell, Vol. I, p. 176).

It may be noted that the welded seam back of the rollers is very hot and hence is of high resistance and thereby any tendency of the current to flow from one sheet to the other through the parts already welded is resisted. Also, as shown in Figs. 2 and 3 of this Thomson patent, which figures illustrate the process as it is being carried out, the sheets to be welded are shown as divergent as they are being fed to the rollers, so that in advance of the rollers there is no metal through which the current may flow. Hence the current is confined lengthwise of the seam to the parts being welded between the rollers by the high resistance of the hot metal back of the rollers and by lack of contact of the sheets ahead of the rollers.

It is confined crosswise of the seam by the limited extent of the overlap of the sheets.

Hence in the Thomson roller process the current is confined to the parts being welded by the arrangement of the work on three of the four sides, namely in both directions crosswise and in the direction ahead of the rollers. In the direction back of the rollers, it is confined by the high resistance of the adjacent highly heated metal.

THOMSON'S LAP WELDING ROLLER PROCESS A BUTT WELDING PROCESS.

As shown by our earlier discussion of the basic electric welding Thomson patents Nos. 347,140 and 347,141 (*supra*, p. 6), the butt welding process consisted of placing in contact *only those parts of the pieces* which were to be welded, thereby providing a path of limited cross-section and consequent high resistance for the passage of the current; then passing a heavy electric current through the restricted path provided by the parts in contact thereby heating those parts adjacent the joint to welding temperature; and then pressing or bodily forcing the two parts towards one another so as to complete the weld.

These steps, which are characteristic of butt welding, are carried out in the Thomson roller lap-welding process. *First*, the two plates are arranged in proper relation, namely with their edges slightly overlapped, thus providing a comparatively narrow and limited path of high resistance for the passage of the current; *second*, the current is passed from one sheet to another through that path, the current being confined thereto *by the arrangement of the sheets themselves*, and *third*, the two plates are forced bodily together by the rollers to complete the weld. The Thomson roller process is therefore a butt welding process.

The Thomson roller process was deemed patentable and the patent issued therefor because Thomson there dealt not with the butt ends of two metal rods, as in his earlier patents of 1886, *supra*, but with the overlapped edges of two metal sheets and because he employed rollers to make a continuous lap weld instead of merely forcing the ends of two rods together, as in those earlier patents.

But where in this Thomson patent is Harmatta's idea of making a single small weld, or a series of such welds, at any place in the meeting surfaces of two plane sheets of metal indiscriminately superimposed upon one another without regard to the extent of the area of contact?

There is no such idea in this Thomson roller patent and nothing that suggests that idea. Thomson's roller patent therefore did not disclose or suggest to anyone Harmatta's result, namely a spot weld perfectly answering the purpose of a rivet placed at any desired point.

The Thomson roller patent therefore is absolutely devoid of any trace of the first and most important element of Harmatta's invention, namely *the idea* of a spot weld between two plane sheets at any place in their meeting surfaces. It therefore can not in any sense be taken as suggestive of Harmatta's invention.

This should be sufficient to dispose of this Thomson

roller patent as an alleged disclosure or suggestion of the Harmatta invention regardless of any other considerations.

But suppose that Thomson or someone else had had the thought suggested to him that it would be a useful and desirable thing to make a weld at any place in the meeting surfaces of two plane sheets of metal, how would the disclosure of the Thomson patent aid him in accomplishing that result?

Thomson describes overlapping slightly two sheets at their marginal edges only and thereby confining the current to the overlap where the sheets are welded. This would not suggest to anyone the placing of two plane sheets, one on top of the other, in unlimited and unpredetermined facial contact without any regard whatsoever to the points at which they were to be welded together. Thomson therefore did not teach the manipulation or the possibility of the manipulation of plane sheets with which Harmatta was dealing and which is a characteristic of his invention.

Electric welding is based upon the idea of providing a high resistance to a heavy current at the place of welding. When the pieces to be welded are in contact over a relatively small cross-sectional area as in the Thomson roller patent, that arrangement by the very restriction of the path offered to the current provides the necessary high resistance. But if there are two sheets indiscriminately superimposed upon one another with an unlimited extended area of contact, as in the Harmatta process, a path of relatively great cross-sectional area is provided at the place of welding, *i. e.* between the sheets, for the passage of the current. That path of great cross-sectional area would therefore provide relatively small resistance. As high resistance is needed in electric welding, how is it to be obtained when the conditions seem to prohibit it? That was one of the problems solved by Harmatta, who solved it by a new functional use of pointed electrodes.

Did Thomson in his roller lap welding patent disclose or suggest the solution of this problem? Certainly he did not. He was not even dealing with that problem. He was adhering to the old idea of providing high resistance at the place of welding by limiting the cross-sectional area of the parts in contact. He had no notion whatever of how to provide the necessary resistance without such a restriction of contact of the work itself. Harmatta's problem of providing the necessary high resistance between sheets in unlimited unpredetermined facial contact was not approached, much less solved by Thomson. Without a disclosure of the way to solve that problem the Thomson patent is in no sense suggestive of the Harmatta process.

The Thomson patent describes the use of *roller* electrodes to make a continuous electric lap weld. This idea is not only lacking in suggestion of, but is positively antithetical to Harmatta's idea of a single weld made at any point between the meeting faces of two plane sheets of metal.

The Thomson patent describes *wide rollers* as his electrodes, rollers much wider than the overlap of the sheets to be welded. How are these rollers to be used to make a small round weld at any place between two sheets in extended facial contact? How could they make a weld away from the edges of the sheets? It would be impossible. No one has ever so made such a weld so far as this record shows.

Harmatta devised an absolutely new form of electrodes, namely, pointed electrodes to get his result of a spot weld by concentrating the current solely by the electrodes. Thomson's rollers could not do that.

The Thomson roller patent describes the completion of the weld by the bodily movement of the two sheets towards one another, with an incidental squeezing out of the metal, a characteristic of all welding known before Harmatta's invention. In the Harmatta process there is no squeez-

ing out of the metal. When two superimposed plane sheets are in extended facial contact, as Harmatta arranges them, they can not be moved bodily together. The Thomson roller patent sheds no gleam of light on the solution of this problem of applying the welding pressure without bodily moving the parts. Neither Thomson nor any one else in the art prior to Harmatta had even realized or attacked this problem, much less solved it.

To sum this matter up:—

1. The Thomson roller patent does not suggest Harmatta's radically new idea of a spot weld uniting two plane metal sheets in unlimited extended facial contact at any desired point in their meeting surfaces. Without this idea Harmatta's invention is non-existing.

2. The Thomson patent does not suggest the manipulation of the two sheets so that they be in extended facial contact which is a characteristic of Harmatta's invention, which no one before Harmatta ever suggested and which was a condition under which no one before Harmatta had ever thought that a weld was possible.

3. The Thomson roller patent does not suggest how to solve the problem of welding two indiscriminately superimposed plane sheets in extended facial contact at any point in their meeting surfaces. Thomson disclosed nothing more than the old butt welding idea of providing the necessary high resistance to the passage of the current by restricting the cross-sectional area of the parts in contact. He makes no suggestion of how to concentrate the current to a small spot in sheets in extended facial contact so as to heat only that spot to welding temperature. Neither Thomson, nor anyone else before Harmatta, had any conception of any way of providing that resistance or of preventing the current from spreading out all over two sheets in extended facial contact and passing between those sheets throughout the area of contact, whereby the

resistance to the passage of the current would be so low that no welding heat could be obtained.

4. The Thomson roller patent does not suggest the pointed electrodes, which are a new and essential means in the Harmatta process. Thomson's rollers could not be used, and never have been used to make a spot weld.

5. The Thomson roller patent offered no suggestion of a solution of the problem of how the welding pressure was to be given the parts to be welded without bodily moving the sheets together, which is impossible with two sheets in extended facial contact as in the Harmatta process. Harmatta solved that problem by the invention of a new technique performed by his pointed electrodes (*supra*, p. 15).

The Thomson roller patent therefore suggests neither the idea of making a Harmatta spot weld nor any ideas that would be useful in solving the problem of how to make such a weld.

Now that Harmatta has disclosed not only the brilliant and original conception of a radically new result, namely a spot weld between two plane metal sheets, but also the way to solve the technical problems involved in making that spot weld, the whole thing may seem simple. But it is no more simple than the idea of putting the eye in the point of the sewing-machine needle or the idea of the constant contact of the electrodes in a microphone, but it took the genius of an inventor to think of these revolutionary ideas and in Harmatta's case also patentable discovery and invention of high order.

The Court will look at Harmatta's invention from the point of view of the knowledge of the art as it existed before December 3, 1903, the date of Harmatta's application for the patent in suit. It will find nothing in that art descriptive or even suggestive of Harmatta's invention. It will find nothing of the kind in the Thomson roller

patent above discussed, which is that item of the prior art which has been regarded as more suggestive of Harmatta's invention than any other, only because it dealt with two sheets in lapped contact (but only at their edges) where the weld was to be made and therefore had a misleading superficial resemblance to Harmatta's sheets which were also overlapped or placed one on top of the other but were not to be welded for the whole overlap but only at selected spots. But the distinction that Thomson's overlap was limited in extent and position as a necessary feature of his process, while Harmatta's overlap is unlimited and its extent or position is utterly immaterial to the welding process, is of the utmost significance.

LEMP PATENT No. 553,923, FEBRUARY 4, 1896

(Vol. II, p. 1065).

This patent (Gravell, Vol. I. p. 178) illustrates and describes a scheme using rollers, as in the Thomson patent No. 444,928, for—

“Forming of long joints between strips, bars, plates or rods—such as boiler plates or other articles which are at present riveted—by welding, soldering, cementing or similar operation” (page 1, lines 24-28), and the invention consists—

“In applying to the metal heating electric currents of different frequency during the manipulation thereof.” (Page 1, lines 16-18.)

Lemp's idea was to pre-heat the work, which consisted of two strips diagrammatically illustrated in the drawings, by means of two or more alternating currents of different frequency. He used several transformers, shown for example in Fig. 3, and a number of contacts bearing upon the work and so arranged the polarity of his circuits that through a part of the work the currents flowed lengthwise

of the work and through other parts of the work it flowed crosswise between the electrodes. His entire object was to *pre-heat the work* so as to deliver it in a heated condition suitable for welding between the final pair of roller electrodes.

There was no suggestion in this Lemp patent of Harmatta's invention of welding together two sheets of thin metal at any spot or place in their contacting surfaces by means of pointed electrodes which concentrate the current and pressure at the spot or place to be welded.

There is nothing in the new features of this Lemp patent on which defendant bases any argument against the Harmatta patent. It is on Lemp's diagrammatic showing of an *old* process, in Figs. 1 and 2, that defendant relies. These figures illustrate two ways, described generally by Lemp, for welding two metal strips together by means of two pairs of roller electrodes D, D¹ and D², D³, which can be used either to pass the currents longitudinally through the work or transversely between the members of the two pairs of electrodes D, D² and D¹, D³. Lemp points out that neither of these arrangements is satisfactory because in the case in which currents flow longitudinally through the work the heat is created in the work midway between the two pairs of electrodes and the work between the electrodes is too cold for welding (p. 2, lines 10-24), and in the other case in which the currents are passed between the two members of the pairs of electrodes the heat created by the current between the first pair is lost before the work reaches the second pair of electrodes (p. 2, lines 25-40) and hence the process is ineffective.

Lemp himself, called by the plaintiff as a witness, further explained these old processes (Vol. I, p. 265):—

“Q. 5. Referring now to Figs. 1 and 2 of that patent, which according to the specification illustrates an apparatus that might be used for welding in a

manner employed previous to your invention, please state what method previously employed is therein referred to and illustrated in these Figures Nos. 1 and 2.

A. The apparatus illustrated in Fig. 1 may be used for two different methods, the one illustrated in a previous patent by Professor Elihu Thomson for continuously lap welding sheets of steel or iron, and the other one employed by me for the same purpose or for welding strips of metal together, the difference between the two methods being that in the first the current is passed transversely, while in the latter the sheets to be welded are heated by currents passing longitudinally through the parts to be welded together, and being finally united by pressure, but without necessarily a current passing through the joint.

Q. 6. In those previous methods what was the relation of the electrodes to the overlapped sheets?

A. In both of these methods the electrodes would either entirely overlap the strips to be welded or completely overlap one side. These have particular reference to lap welded joints where the edges are covered by the electrodes proper.

Q. 7. When the methods were applied to welding strips, what was the relation of the electrodes to the strips?

A. The electrodes would completely cover the whole width of the strip or exceed it,—overlap it on either side.

Q. 8. In those old methods please state whether the parts welded together were welded over their entire contacting area.

A. Yes, they were.

Q. 9. State whether that is true of not only the old

methods referred to but to the methods embodying your invention and set forth in that patent.

(Objected to by Mr. Cushman that the patent is the best and only evidence of what is set forth in it.)

A. Yes, it covers both the old and the new.

Q. 10. How do you reconcile these facts with the showing of Fig. 2 of your patent?

A. The only way I can explain this discrepancy is an error of the draftsman at the time this illustration was made.

Q. 11. Has the method of your patent No. 553,923 gone into practical use?

A. No, it never went by the experimental stage."

Lemp's invention for which he took his patent consisted in combining the longitudinal flow of currents with the transverse flow of currents, either of which alone he states is inefficient, with the hope of obtaining sufficient heat by their combination. That is, as shown in Fig. 3 for example, a current of one frequency flows longitudinally in the work from D to D^1 and from D^2 to D^3 , and a current of different frequency flows transversely through the work as from D^1 to D^3 and D^3 to D^4 . *The object is to preheat the work* so that when it arrives at the point between the rollers D^4 to D^5 it will be so hot that the current from D^3 to D^4 will raise it to the welding temperature, and the weld will be made by the rollers D^4 , D^5 .

So far as this record discloses, Lemp's invention was no better than the prior processes which he condemned, and it never went into use and never made any impression upon the practical art. It is the opposite in all material respects of the practical and enormously commercially valuable spot welding invention of Harmatta.

At most the Lemp patent is no more pertinent than the Thomson roller patent which we have already discussed.

As the Thomson roller lap welding patent does not anticipate or render invalid the Harmatta patent, neither does the Lemp patent. Neither is in any sense an anticipation of Harmatta's invention.

ROBINSON PATENT No. 574,942, JANUARY 12, 1897
(Vol. II, p. 1070).

This patent (Gravell, Vol. I, p. 172) is for a "rail joint" and specifies the welding of a fish plate *provided with projections* to the side of a rail web. No method or apparatus is disclosed for accomplishing this result. Defendant's expert Dyer assumes that the man skilled in the art, if called upon to carry out this process, would apply large electrodes to the backs of the rail web and fish plate respectively, and pass an electric current from one electrode to the other through the fish plate with its projections and through the rail web.

A serious objection to this process is that the projection on the fish plate being small would heat rapidly, while the part of the rail web against which it abutted would heat slowly, because the heat would be conducted away with great rapidity by the metal of the rail web. The projection would probably melt before the rail web reached welding temperature and no weld could be obtained.

The process is merely a species of butt welding, namely an effort to butt weld the end of the projection on the fish plate to the rail web.

The Robinson patent contains no disclosure or suggestion of Harmatta's inventive thoughts, namely:

1. The idea of a weld between two *plane* metal sheets at any place in their meeting faces.
2. The idea of placing the sheets in unlimited and undetermined facial contact and of the use of pointed electrodes to concentrate the current in a path through the spot to be welded. In Robinson as in all processes of

butt welding the shape or arrangement of the pieces to be welded provided a path of small cross-sectional area in order to obtain the resistance to the passage of the current necessary to create the welding heat.

3. The idea of a new technique, namely, *a*, heating by a welding current delivered by pointed electrodes to a spot only between the meeting faces of two sheets in extended unlimited facial contact, that spot being entirely surrounded by comparatively cold metal, and *b*, pressing the heated metal to complete the weld without moving the sheets bodily together.

The process of the Robinson patent is therefore absolutely devoid of the characteristics of the process of the Harmatta patent and the Robinson patent contains no suggestion or thought pertinent to the Harmatta invention.

KLEINSCHMIDT PATENT No. 616,436, DECEMBER 20, 1898
(Vol. II, p. 1076).

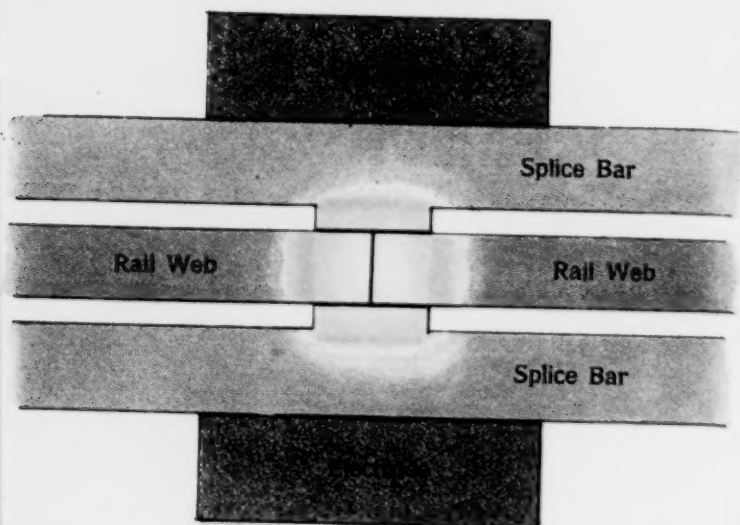
This patent (Gravell, Vol. I, p. 174) describes another process of welding projections on splice bars to rail webs.

The process is a butt-welding process. As shown in the patent, Fig. 2, for example, the splice bars are provided with projections. At each end of the splice bar is a flat projection of considerable area, and at the middle of the bar is a similar projection extending from top to bottom. Two splice bars equipped with these three projections are placed at the sides of the abutted rails with the middle projections opposite the joint between the rails, and with the projections at the ends of the splice bars opposite to one another and laid adjacent to the rail webs. Electrodes of much greater facial area than the area of the projections are applied against the backs of the splice bars opposite a pair of projections. Each splice bar is in

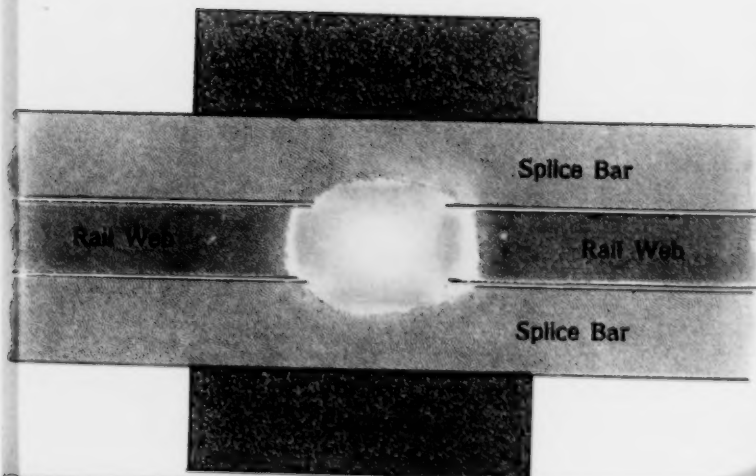


PROJECTION WELDING.

HEATING.



PRESSING.



contact with the rail web at the projections only and not at any other point.

In the accompanying drawings we illustrate the Kleinschmidt process.

The first drawing shows the effect of the electric current which passes from one electrode to the other through the splice bars, their projections and the interposed rail-web. The path of the current is determined by the opposing projections on the splice bars. These projections and the portion of the rail-web lying between them are raised to welding temperature, as shown in yellow. The adjacent parts are raised to a lesser temperature by conduction of heat, as shown in red.

The second drawing illustrates the pressing of the parts together to form the weld. The splice bars are moved bodily against the rail-web and the projections thereon are welded to the rail-web with the usual squashing of the metal and its extrusion, which takes place in all butt welding operations of which this Kleinschmidt process is a species.

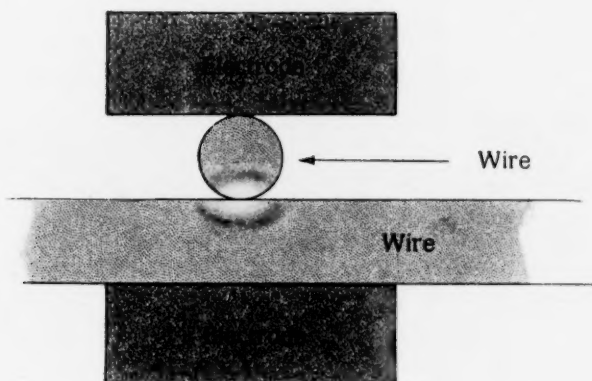
The Harmatta patent refers to the Kleinschmidt patent by name and number and says:—

“I . . . do not wish to be understood as claiming anything disclosed in said patent.” (Page 2, lines 94-100.)

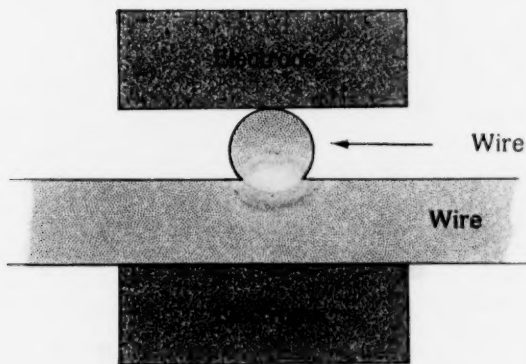
There is not in the Kleinschmidt patent the least thought of forming in flat sheets an isolated spot weld. There is not the least idea of placing two plane sheets in unlimited facial contact, nor of the use of tapered electrodes to concentrate or localize the electric current at that spot, nor of delivering the welding pressure to that spot by applying that pressure to yielding metal between the ends of the electrodes, whereby the metal to be welded

PERRY No. 670,808.
CROSS-WIRE WELDING.

HEATING.



PRESSING.



ent and the pressure in a spot surrounded by cold metal, as in the Harmatta patent.

On the application of the welding pressure the parts being welded are moved bodily toward one another and metal is extruded from the welded joint. These operations are the opposites of Harmatta's operations of pressing and moving only the softened metal and not moving the sheets themselves.

The accompanying drawings illustrate the Perry process.

The Perry patent is merely a specific example of a kind of butt-welding. The Perry process is in principle of operation and characteristics the opposite of the Harmatta process. It is absolutely immaterial.

PARKINSON BRITISH PATENT No. 14,536 OF 1894

(Vol. II, p. 1111).

This Parkinson patent (Gravell, Vol. I, p. 183) shows a machine for "*glut-welding*". A wedge-shaped glut piece C^{II} is forged to fit the curved triangular space between the corners of two adjacent triangular-shaped metal spokes F of a wheel. The purpose of the machine is to heat the glut piece and force and spread it into the space between the spokes and weld it to the spokes.

The glut piece C^{II} is pressed into the angle between two spokes by a contact block M . Contact arms L fit into the corners of the spokes in the inside. If a larger wheel is employed the contact arms L are provided with adjustable clamps L^1 to fit the radius of the larger wheel (p. 3, lines 6-9).

As shown in Figs. 1 and 2, the contact arms L are of the same height as the width of the spokes. Also the part of the contact block M which bears against the glut piece is of the same height, as shown in Figs. 4 and 5. By this means the contact blocks or electrodes M and L extend across the entire width of the pieces to be welded

together. This alone is entirely inconsistent with an Harmatta spot weld made *at any point* in the contacting area of two sheets of metal, however remote from their edges.

Parkinson employs an hydraulic ram B to force the contact blocks against the opposite sides of the work. The patent states:

"The outward movement of the ram B carries forward the contact block M, which makes contact with the glut piece C¹¹ and holds it firmly against the outer rim of the wheel C, at the same time bringing the contact arms L against the inner face of the wheel, thereby completing the secondary circuit through the part of the wheel C and glut piece C¹¹ to be heated." (Page 3, lines 36-40.)

The heating current is maintained until the entire glut piece is softened. Then another hydraulic ram B¹, upon whose end are fixed two die pieces *b*, *b*¹ sliding through recesses in the block B, project these die pieces over the glut piece and spokes, thereby forming a "closed die" around the glut piece and spokes. Finally the full pressure of the ram B is applied and the glut piece is squashed and pressed against the spokes and welded to them over their entire area of contact.

The accompanying drawings illustrate first the heating of the glut piece and adjacent portions of the spokes to welding (yellow) temperature, and second the squashing of the glut piece and its welding to the spokes.

There is no hint or suggestion in the Parkinson patent of making a spot weld, or of any weld, less than the area of the pieces in contact.

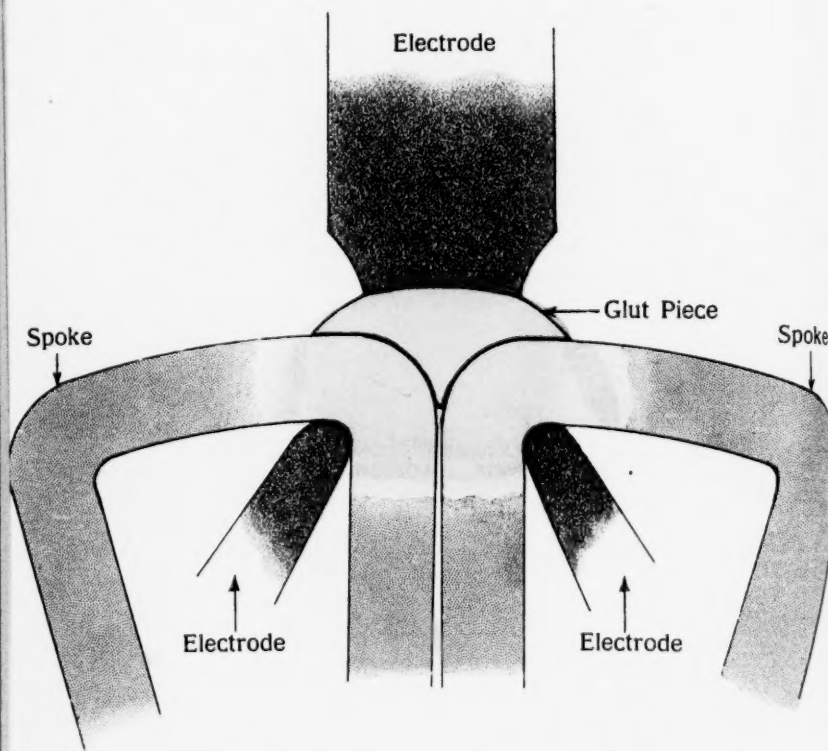
There is no suggestion of welding two superimposed sheets of metal together at any spot in their meeting faces, however remote from their edges.



PARKINSON — BRITISH No. 14,536 — 1894.

GLUT WELDING.

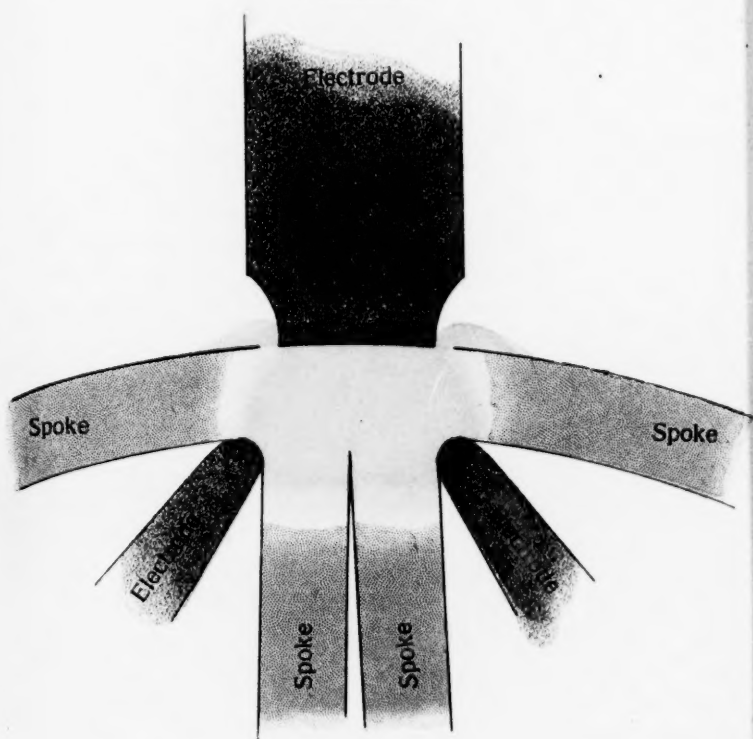
HEATING.

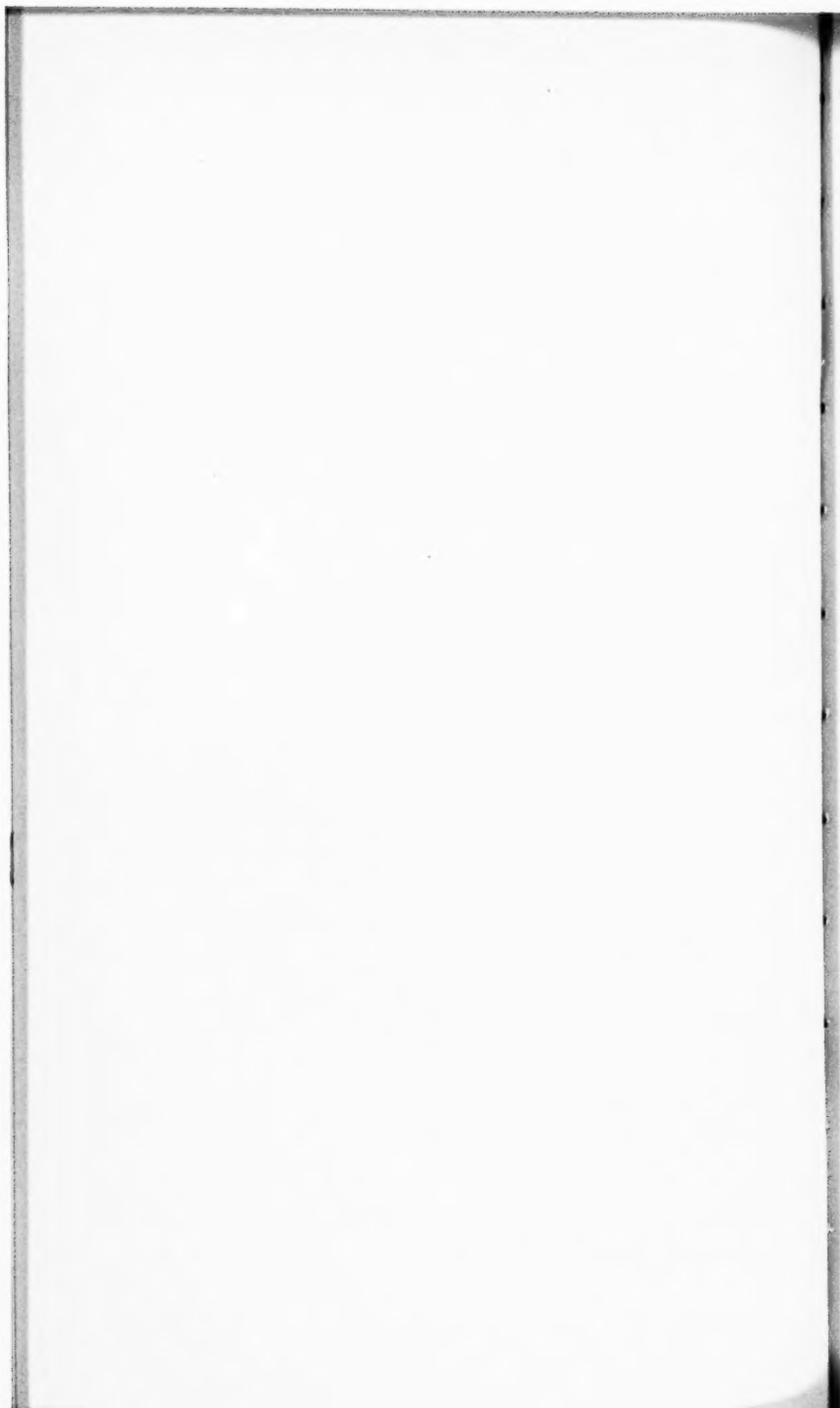


PARKINSON — BRITISH No. 14,536 — 1894.

GLUT WELDING.

PRESSING.





In Parkinson the current is not concentrated by the electrodes nor is the pressure for welding concentrated by the electrodes.

The soft welding metal is not surrounded by cold metal and the soft metal is spread during the welding process by the squashing of the glut piece against the spokes.

The glut piece is bodily moved against the spokes while being welded.

It is necessary to shape the glut piece to fit the recess between two adjacent spokes in preparation for the operation.

In all these respects the Parkinson process is the opposite of the Harmatta process.

The Parkinson patent was issued in 1894 and no one was inspired by its disclosure to practice Harmatta's invention of spot welding. The Parkinson patent is in every respect immaterial to the novelty and validity of Harmatta's invention.

The foregoing are all of the patents in the art prior to Harmatta's invention, and all, therefore, that need be considered by the court in determining the novelty and patentability of that invention.

FERRANTI AND RIETZEL.

In addition, the defendant has introduced evidence relating to the Ferranti British patent No. 11,921 of 1903, patented and published in 1904, and to the Rietzel United States patent No. 928,701, issued July 20, 1909, and to certain abandoned and immaterial experiments made by Mr. Rietzel in the year 1898. Although none of these things are to be considered as part of the art prior to Harmatta's invention, the two patents being of later date and Rietzel's work being merely an abandoned experiment, we shall discuss them at this point, because it seems well to answer here certain arguments made by the defendant to the effect that these things affect the novelty and patentability of Harmatta's invention.

FERRANTI BRITISH PATENT No. 11,921 OF 1903
(Vol. III, p. 1479).

The provisional specification of this patent was filed May 25, 1903. The complete specification was filed February 25, 1904, and accepted August 25, 1904.

As the Harmatta patent in suit was applied for December 3, 1903, the Ferranti British patent is not a reference, that is, it is not part of the art prior to Harmatta's invention, for it was not published or patented until after the date of Harmatta's United States application. *

Even if the Ferranti patent were part of the art prior to Harmatta's invention, it would not anticipate that invention or limit the scope of Harmatta's patent (Gravell, Vol. I, p. 318). The Ferranti patent describes a species of butt welding in which the butt end of a turbine blade, crescent-shaped in cross-section, is to be welded to the face of the turbine disc.

Ferranti realized that, as the turbine disc was large and

**Elizabeth v. Pavement Co.*, 97 U. S. 126, 130.

massive compared to the turbine blade, its mass would dissipate the heat created in the disc by the welding current so that the disc could not be raised to a welding temperature at the same time as the end of the blade to be welded thereto. He therefore states:—

“The invention, therefore, consists broadly in adjusting the volume of metal of the disc in the neighborhood of the welding point so that approximately equal heating occurs in both faces to be welded, whereby turbine wheels with welded blades may be reliably produced in an inexpensive way.” (Page 1, lines 16-19, Prov. Spec. Vol. III, p. 1479.)

Ferranti therefore modified the face of the turbine disc by cutting grooves crosswise, longitudinally or crisscross or by boring holes therein with the effect of forming small projections on the face of the disc. He also suggests reducing the volume of the turbine disc by boring holes into the edge of the disc.

As he states in both his provisional and complete specifications:

“The object to be kept in mind in this as in other modifications is to remove sufficient metal to enable the temperature to rise to the welding point as explained above, while at the same time leaving sufficient areas untouched to ensure due mechanical strength in the welded joint.” (Page 1, lines 28-31, p. 3, lines 33-36.)

After thus forming projections on the face of the turbine disc Ferranti proposes to butt weld the end of the turbine blade to those projections.

The process is a pure butt welding process, like the Kleinschmidt and Robinson processes already discussed,

in which a metal piece is welded to the projections on another piece. It has none of the characteristics of the Harmatta electrode spot welding process described in the Harmatta patent. The Ferranti welding is in no sense the substitution of a weld for a rivet. *The current and pressure are not concentrated by electrodes in a spot between the meeting faces of two plane sheets in facial contact, as in the Harmatta process. In the Ferranti process the current and pressure are concentrated by the work, namely, the projections on the face of the disc and the turbine blade itself. The Ferranti welds are made throughout the areas of the parts in contact. The parts move bodily towards one another under the welding pressure and there is extrusion of metal.* The process suggested by the Ferranti patent is therefore not anticipatory in any sense of the process of the Harmatta patent in suit.

The Harmatta patent and a pending United States application by Ferranti filed December 29, 1911, were, wrongfully as we contend, thrown into an interference with one another in the Patent Office because Ferranti in that application has inserted the first four claims of the Harmatta patent in suit. This interference has been decided against Ferranti by all the Patent Office tribunals and by the Court of Appeals of the District of Columbia, 273 Fed. 357.

There can be no interference in fact and none should have been declared. It is only because of the fact that, as is often the case, certain words can more or less inadequately describe two utterly different things, that the Patent Office found a verbal resemblance between Ferranti's butt welding idea and the spot welding of Harmatta.

In this interference Ferranti claimed the right to date his invention from the date of the provisional specification of his British patent.

This claim was made under the provisions of the second paragraph of Section 4887 of the Revised Statutes.*

Inasmuch, however, as Ferranti's United States application in interference (Vol. II, p. 1321) with the Harmatta patent is an application for a patent on spot welding, and as his application for his British patent was an application for an invention relating to the welding of turbine blades to the turbine wheel or disc, and consisted in adjusting of the metal of the turbine disc at the place of welding so that equal heating of the turbine disc at that place and of the end of the blade would result, the applications were for different inventions and not for the same invention, and hence Ferranti's United States application in interference is not entitled to the date of his application for the British patent. Consequently, as Ferranti has no other date prior to the date of Harmatta's United States application, the claim that he is an inventor prior in date to Harmatta must fail.

"An application for patent for an invention or discovery or for a design filed in this country by any person who has previously regularly filed an application for a patent for the same invention, discovery, or design in a foreign country which, by treaty, convention, or law, affords similar privileges to citizens of the United States shall have the same force and effect as the same application would have if filed in this country on the date on which the application for patent for the same invention, discovery, or design was first filed in such foreign country, provided the application in this country is filed within twelve months in cases within the provisions of section forty-eight hundred and eighty-six of the Revised Statutes, and within four months in cases of designs, from the earliest date on which any such foreign application was filed."

A "patent for the same invention", the very phrase employed in Section 4887 before the amendment of 1897, has invariably been construed by the courts as a patent which by claim or otherwise sought to cover the invention *claimed* in the United States patent.

Leeds v. Victor, 213 U. S. 301.

Fireball v. Commercial, 239 U. S. 156.

Westinghouse v. Stanley, 138 Fed. 823.

Acme v. Commercial, 192 Fed. 321, 327, 328.

Moreover Ferranti is not the prior inventor of the subject-matter of the claims of the Harmatta patent in suit because his British provisional specification (Vol. III, p. 1479) does not describe anything like spot welding.

To adjust the metal of the disc to obtain equal heating Ferranti suggests the cutting of grooves or holes in the face of the turbine disc which would leave projections to be welded to the butt end of the turbine blade. These projections, rendered plastic by the heat developed by the welding current, would be squashed down by the welding pressure and the spreading metal would fill the spaces between the projections and form one continuous weld (Gravell, Vol. I, p. 353).

If the projections did not merge, the process would be simply that of the prior Kleinschmidt and Robinson patents above discussed, namely projection welding.

Ferranti's process therefore does not anticipate Harmatta's invention.

The Examiner of Interferences in the *Ferranti v. Harmatta* interference awarded priority to Harmatta on two grounds, *first* that Ferranti's British provisional specification did not disclose the subject-matter of the interference issues, the first four claims of the Harmatta patent, and *second* that Ferranti, because of his delay, was estopped from making the claims, citing *Wintroath v. Chapman*, 248 O. G. 1003, and other cases to the same effect.

The Board of Examiners-in-Chief affirmed this award, holding that Ferranti had disclosed the subject-matter of the claims, but was estopped from making them.

The Commissioner of Patents on appeal by Ferranti held that Ferranti's British provisional specification did not disclose the invention.

The Court of Appeals of the District of Columbia held that Ferranti because of his delay was estopped from making the claims 273 Fed. 357.

That interference is significant as showing that the defendant and its associates have been struggling vigorously for several years to take from Harmatta his first four claims and to obtain a patent containing those claims for themselves.

The Ferranti application in interference with the Harmatta patent has been assigned from Ferranti to Mr. Melville Church, defendant's attorney, and assigned by him to Mulligan, Trustee, who is the head of the Welding Patents' Investigating Committee, an association formed to oppose the Harmatta patent. It is giving its assistance, other than financial, to the defense in this case.

The defendant, the Ford Motor Company, has taken a license from Mr. Mulligan under this Ferranti application (Vol. III, p. 1980).

The efforts that the defendant's associates are making to obtain for themselves the first four claims of the Harmatta patent are very significant as showing their belief that the subject-matter of those four claims is a patentable invention.

RIETZEL PATENT No. 928,701, JULY 20, 1909 (Vol. II, p. 1098) AND RIETZEL'S EARLY ABANDONED EXPERIMENTS.

The Rietzel patent No. 928,701, issued July 20, 1909, on an application filed February 24, 1905, and the abandoned experimental work done by Rietzel many years before, namely in 1898, are absolutely immaterial and have no bearing whatever upon the validity or scope of the Harmatta patent in suit.

The Rietzel patent both as to its date of issue, July 20, 1909, and its date of application, February 24, 1905, is later than the date, December 3, 1903, when Harmatta filed his application for the patent in suit in the United States Patent Office. It is therefore not part of the art prior to Harmatta and has no effect either anticipatory or

limiting upon Harmatta's patent. It can play no part in this case except to accentuate the fact that Rietzel's work was not on Harmatta's line, but only on that form of butt welding known as "projection welding".

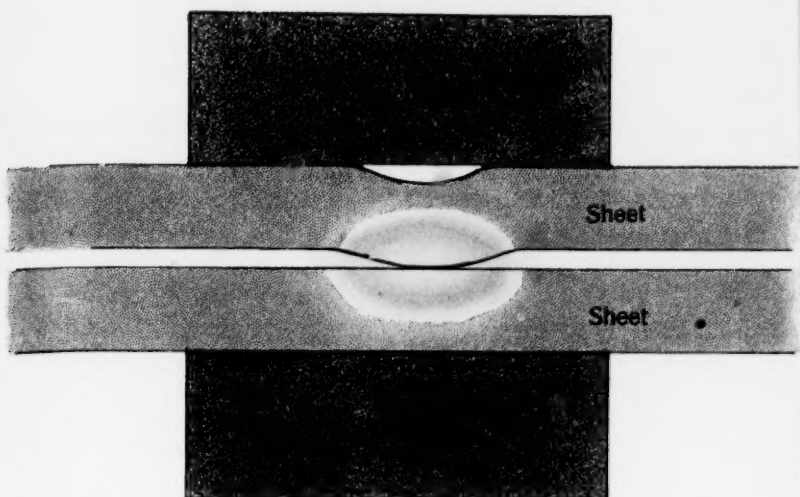
The accompanying drawings illustrate a typical form of the Rietzel process of welding a projection on one sheet (the projection being formed by indenting the back of the sheet) to the face of another sheet. Figs. 2 to 5 of the patent show other forms of projections.

Mr. Rietzel, called by the defendant (Vol. I, p. 633), has fully set forth the nature of certain slight experimental work done by him in 1898. He states that at that time he was the superintendent of the factory of the Thomson Electric Welding Company and one of the things which he wanted to weld was the ends of wheel or brake bands. The difficulty was that when the ends were butt-welded there was considerable extrusion of metal, or "burr" as it is called, which it was necessary to remove at considerable expense (Vol. I, p. 655). He thought that if the ends were overlapped they could be welded together. He first tried to do this with electrodes extending across the entire width of the ends of the bands, but this operation was not successful as it required too much current. He then took an electrode that had been used for welding studs on another machine and made four or five welds at the edges of the overlapped ends of the wheel band. Rietzel had no idea of making a weld at any point between the meeting faces of two plane sheets of metal in extended contact. He was trying to weld the overlapping edges only of two metal pieces.

Rietzel made a sketch (Vol. III, p. 2041) of what he did. From this sketch it will be seen that he did not at all have in mind Harmatta's process because the overlap of the ends of the bands was less than the width of the electrodes (just as in the Thomson roller process which we have fully dis-

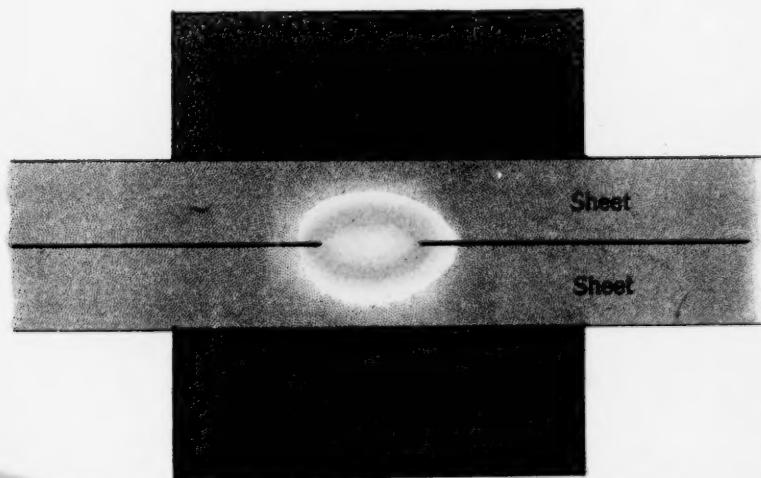
REITZEL No. 928,701.
PROJECTION WELDING.

HEATING.



The above illustrate the process of Fig. 1 of the Rietzel patent. Fig. 2 shows like projections on both sheets in contact with one another. Fig. 3 shows projections cast on one of the sheets. Fig. 4 shows projections cast on both sheets and Fig. 5 shows small pieces of metal interposed between the sheets. All are variants of butt welding.

PRESSING.





cussed), so that the current and pressure were both localized by the arrangement of the work, not solely by the electrodes as in the Harmatta process. There was no creating of welding temperature at a spot in the meeting faces of plane sheets, which spot was entirely surrounded by metal, and no application of pressure to that spot through yielding metal entirely surrounded by a sheath of cold unyielding metal as in the Harmatta process. Rietzel's pressure squashed down the edges of his bands and the squashed metal spread out at the sides. In fact, it was his object to bring the ends of the two bands into one plane (Vol. I, p. 658, X-Q. 158).

Rietzel's welding failed to accomplish his purpose because it did not bring the ends of the bands fully into the same plane which was what he has trying to do. After trying this experiment a few times in July, 1898, he threw the pieces into the scrap heap (X-Q. 159) and abandoned the whole proposition. The only persons who, he thinks, saw this experiment were Mr. Robert W. Clark and Mr. George Osgood, both employees of the Thomson Electric Welding Company (Q. 19). He never communicated his work to the officials of that company (X-Q. 153). Mr. Clark remembers nothing whatever about it. Mr. Osgood has had a stroke of apoplexy and is unable to testify (Clark, Vol. I, p. 254).

This work was merely an experiment and immediately abandoned as it failed to accomplish the purpose desired.

Later in the same year 1898, Mr. Rietzel tried without success to weld together two pieces of a ploughshare by the same method (X-Q. 160). At about the same time he says that he welded two pieces of a ploughshare by punching up projections on one piece and welding them to the other piece. He only made one sample of this work. His statement that later two other samples were made in his absence from the plant is merely hearsay. Mr. Clark,

who, Mr. Rietzel said, did that work, does not recall anything about it (Vol. I, p. 254). This work was also purely experimental and nothing more was done along these lines for several years.

It is not conceivable that if Rietzel had accomplished anything substantial he would not then have developed it further. But *six years elapsed* before Reitzel again did any work involving the welding together of sheet metal pieces at isolated spots. Then in June, 1904, he welded together two sheaves forming a pulley by means of the projection welding method disclosed in his patent No. 928,701 (X-Q. 162), which is not Harmatta's process. As this date is subsequent to Harmatta's date of application this welding is not part of the art prior to Harmatta.

Under these circumstances Rietzel's experiments of 1898 made privately for his own instruction and edification, and not disclosed to any of the officials of the Thomson Company (Rietzel, Vol. I, p. 657, X-Q. 151), which were in no sense commercial, and not further developed or made the basis of any further development along the same lines, and the results of which went into the scrap heap, were merely abandoned experiments and have no effect to anticipate or limit the invention of the Harmatta patent in suit.

The law on this point is thoroughly settled. We cite the authorities, *infra*, p. 208, in connection with our discussion of the alleged McBerty prior use defense.

Defendant contends that in some way, not intelligibly defined, the plaintiff is estopped to deny that Rietzel anticipated Harmatta.

We show later (p. 220) that there is no basis whatever for this contention.

SUMMARY OF THE PRIOR ART.

In the prior art there is no patent which describes or foreshadows the Harmatta process of laying two plane sheets of metal one upon the other and uniting them by a weld at any point in their contacting surfaces however remote from their edges, the weld answering perfectly the purposes of a rivet (Gravell, Vol. I, p. 186, Dyer, Vol. I, p. 592, X-Q. 110).

Only the following patents of the prior art describe the overlapping of two plane sheets: Benardos United States patent 363,320, the Benardos German patent 50,909, Thomson soldering patent 496,019, Thomson riveting patent 396,015, none of which describe electric welding, and Thomson roller patent 444,928 and Lemp patent 553,923.

Of these patents the United States Benardos patent is for arc welding (*supra*, p. 23), the German Benardos patent is for welding or soldering by heating the backs of the sheets by hot blocks, with the same effect as if the heat were applied by a plumber's torch (*supra*, p. 24). The Thomson patent 496,019 is for soldering (*supra*, p. 27), and the Thomson patent 396,015 is for riveting (*supra*, p. 35). In the Thomson patent 444,928 the sheets are overlapped at their edges only, and a lapjoint weld is made by roller electrodes (*supra*, p. 50). In the Lemp patent 553,923 the same weld is made as in the Thomson patent 444,928 and several pairs of electrodes are employed to preheat the work (*supra*, p. 46).

None of the processes of these prior patents were put into use before the date, December 3, 1903, of Harmatta's application for the patent in suit.

None of these patents contain or suggest Harmatta's idea of making a spot weld between two plane sheets of metal.

The other patents of the prior art do not even deal with plane sheets.

The Coffin patent (*supra*, p. 26) and the Thomson patents 347,140 and 347,141 (*supra*, p. 6) describe the butt-welding of the ends of two rods.

The Blanchard patent describes merely the heating of a rivet (*supra*, p. 31).

The Lemp patent 531,197 describes the heating and annealing of a portion of a single hardened steel plate (*supra*, p. 32).

The Burton patent describes merely the heating of the ends of pieces of metal by the electric current, which ends are later welded on the blacksmith's anvil (*supra*, p. 32).

The Robinson patent (*supra*, p. 57) and Kleinschmidt patent (*supra*, p. 58) describe processes for welding projections on heavy plates to other plates, the projection in all cases extending to the edge of the plates. These processes are merely variations of butt welding.

The same is true of the Ferranti provisional specification accompanying his application for his British patent, so that that specification is immaterial even if considered a part of the prior art (*supra*, p. 64).

The Perry patent describes the process for welding cross-wires or superimposed balls and does not deal with sheets. It is butt welding (*supra*, p. 60).

The Parkinson British patent describes the process of squashing and welding a glut piece into a recess between two adjacent spokes of a wheel (*supra*, p. 61).

Harmatta's invention involved the idea of a new result, namely, a weld, perfectly answering the purposes of a rivet, made at any point between the contacting surfaces of two plane sheets of metal however remote from their edges. No prior patent describes or in any way foreshadows a process producing that result. (See Gravell's Chart, Vol. I, p. 427.)

No prior process made between two plane sheets of metal a

weld entirely surrounded by and integral with the metal of the sheets.

No prior process consisted in the following steps (a), laying two plane sheets one on the other in unlimited and unpredetermined extent of facial contact, (b), concentrating or localizing the welding current in a narrow path in the continuous metal of such sheets to heat only the metal in that path to a soft and plastic condition, leaving the surrounding metal cold and unyielding, and (c), applying welding pressure only to that soft and plastic metal to make the weld without moving the sheets bodily and without the extrusion of metal. That process was absolutely new with Harmatta. In that process three steps were absolutely new with him, namely, that of superimposing one sheet on another in indiscriminate unlimited unpredetermined facial contact, that of concentrating or localizing the welding current at a particular spot in the contacting surfaces of two such superimposed plane sheets, and that of localizing the pressure so as to press and move only softened metal surrounded by and integral with unyielding immovable metal.

The Harmatta process is an "*electric welding*" process, that broad art having been created by the original Thomson patents of 1886, wherein the heat is created by the resistance of the work itself. It is a branch of that art which was absolutely new with Harmatta.

Both the Harmatta process and the Harmatta product were radically new.

**OPINION OF THE COURT OF APPEALS FOR THE
SIXTH CIRCUIT (Vol. III, p. 2098).**

The majority opinion of the Court of Appeals for the Sixth Circuit, delivered by Judge Knappen, Judge Denison dissenting, after a review of some of the patents of the prior art, to which we have above referred, sums up

its conclusion denying patentable quality to Harmatta's invention as follows:—

“We agree with Judge Dodge* that Harmatta's idea of ‘making his electric welds small in area rather than large in comparison with the areas of the opposed surface to be joined and isolating them, so as to leave each surrounded by a comparatively large area of unwelded surface’, does not involve invention in view of the prior art. In other words, given the desire for a welding in spots, naturally enough suggested by the prior art and by its commercial development, we think Harmatta's specific application of the principles of that prior art involved only the skill of the expert mechanic. Not only every principle, but every electric and mechanical process, involved in the Harmatta claims, was well known in the prior or directly analogous arts, or in mechanical arts generally. We can not think, in view of the prior art, that invention is to be found in the considerations, separately or collectively, that in Harmatta no bodily movement of the sheets is required, that the current is localized and pressure exerted solely by the electrodes, or by the difference in the form of the electrodes, or by the difference in amount of extruded metal, as compared with some of the earlier applications of resistance welding. Although invention is not necessarily negatived by the fact that each element of the combination is old, the question of fact whether the combination itself involves invention in view of the prior art is always present.”

The extract from the opinion of Judge Dodge above

*Judge Dodge in the Barney & Berry case in the Massachusetts District Court held the Harmatta patent invalid for lack of patentable invention. 227 Fed. 428, 433.

quoted would make it appear as if Harmatta's idea or inventive thought was merely to change the size of the welds between two opposed surfaces and to isolate those welds, but, we respectfully submit, Harmatta's invention involved much more than this.

What we believe to be the error of the majority of the Court of Appeals is made clear by a further examination of its opinion.

That opinion in the above quoted extract proceeds to explain the reasons why the court thought that no patentable invention was made by Harmatta "in view of the prior art", stating as the basis of its argument that "given the desire for a welding in spots, naturally enough suggested by the prior art and by its commercial development", no invention was required to do what Harmatta did. *If by this the Court meant that before Harmatta the patented art had disclosed or suggested the idea of a weld between the opposing surfaces of two plane sheets of metal at any place in their meeting surfaces however remote from their edges or that such a weld was known in the prior commercial art, we respectfully submit that the Court erred.*

The "desire" for a weld that would perfectly answer the purpose of a rivet (which was generally used), was undoubtedly present and pressing for the many years during which articles have been made from relatively thin metal sheets securely united to each other by rivets.

It is well said that "necessity is the mother of invention" and unsatisfied "desire" to accomplish a certain result is the best known proof of patentable quality in that development of the art which secures that result.

Inventors previous to Harmatta had suggested electric welding in place of ordinary or blacksmith welding for use in many special situations. But to unite two plane sheets *at any point in their meeting faces* required a departure from

known methods beyond "the skill of the expert mechanic" to which the Court of Appeals above refers.

Blacksmith welding of spots in the meeting faces of plane sheets was impracticable, if not impossible, because of the difficulties of heating and pressing the spot as we have explained (*supra*, p. 42). The "desire" for a spot weld had never been satisfied or capable of satisfaction by the blacksmith welding art. The electrical welding art, which for some work, had before Harmatta, taken the place of the methods of the blacksmith, suggested no method of solving the problem of heating and pressing at such a spot, which had so completely baffled the blacksmith.

The technical difficulties involved in creating the heat in the spot to be welded and in completing the weld remained unsolved until Harmatta. No one knew how to develop the heat at the place or spot to be welded when the sheets were in extended undetermined facial contact. No one knew how to apply the pressure necessary for welding without moving the sheets bodily towards one another. No one knew how to dispose of the extruded metal which was the characteristic of all welding before Harmatta.

The Court of Appeals seems to have altogether overlooked these considerations which in so many cases have been held by the courts to be in and of themselves quite sufficient to show patentable quality in an invention (*infra*, p. 98).

The best proof that there was invention in making a spot weld as described in the Harmatta patent is that the "desire", although existing and pressing for such a weld, did not lead even to a "suggestion" either of such a weld or of a method which would produce such a weld. The reason for such lack of suggestion may well have been that, as Harmatta has now shown, such a weld involved

a radical departure from previous theories of welding both blacksmith and electrical. But whatever the reason the lack of such suggestion stands out clearly from a review of the prior art and is of the utmost significance as showing the necessity of "invention" before the Harmatta result could be attained.

The patents referred to in the opinion of the Court of Appeals certainly do not disclose or suggest Harmatta's ideas.

The Thomson basic patents No. 347,140 and 347,141 disclose and suggest only electric butt welding the ends of rods (*supra*, p. 6).

The Thomson patent No. 396,015 for electric riveting is for almost the exact opposite of the idea, result and mode of operation of Harmatta's invention because it necessarily involves the use of a rivet while Harmatta's invention had as its basic thought the idea of a weld to take the place of a rivet and thereby dispense with a rivet. So far as any welding together of the plates around the rivet is concerned the Thomson patent does not describe a process of electric or resistance welding at all because the heat in the plates is *conducted thereinto from the rivet* and there is no suggestion in the patent of obtaining heat by the resistance method. Even if there were such a suggestion it would be immaterial because there is no idea of a Harmatta spot weld and no method disclosed by which one could be made (*supra*, p. 35).

The Thomson patent No. 444,928 for the roller lap welding process (*supra*, p. 40) contains no idea of a spot weld made anywhere between the meeting surfaces of two plane sheets placed on one another in any way. The Thomson process is capable of welding only the limited overlap of the edges of two sheets. Such lap welding was old before Thomson and he adopted an electric roller welding process to get that old result. Such a weld is

not a spot weld in any sense. Before Harmatta such a weld had never been made by anyone by any process of welding.

The opinion of the Court quotes from the Thomson roller patent "the work being properly arranged, so that the pressure devices will press the surfaces to be welded together and simultaneously passing the electric current through the work *at the point of pressure*" (Italics in opinion of Court), as if this was an anticipation or suggestion of Harmatta's invention. The language quoted from the Thomson patent is descriptive of every kind of electric welding known since Thomson's basic patents of 1886 in which this language might well have been employed. In all electric welding the pressure and the current are applied at the same point. Harmatta, like every other electric welder, did this precise thing, but he did it in a way which was entirely different from the way that anybody else had done it before and under new conditions to obtain a new result, which conditions and result were the creations of his own imagination, namely the placing of two plane sheets one on the other in unlimited, unpredetermined facial contact and the making of a spot weld at any point in their meeting faces. The Thomson roller patent nowhere suggests the idea of such indiscriminate placing of the sheets or of any method of welding, *i. e.*, heating and pressing, that could be used with sheets so placed. Thomson could weld only at the overlap of the sheets, with resulting modes of operation which were discarded by Harmatta, who employed radically new and different modes of operation.

The Thomson soldering patent No. 496,019, as we have above explained (*supra*, p. 27), is devoid of any suggestion of Harmatta's inventive thoughts. That patent discloses the idea of heating the contacting pieces, preferably with the aid of heat developed in the electrodes themselves, to

melt the solder over an indiscriminately large area between the pieces. In some examples it describes the use of roller electrodes with corrugated or grooved peripheries, the specification stating as quoted by the Court of Appeals :

“the rollers exert pressure while the current heats the thin metal pieces at successive points between the rollers”.

But there is no justification for the Court's inference herefrom that “this was, to say the least, electric resistance spot soldering”.

If the Court means by this that there was “spot soldering”, namely isolated spots of solder between the sheets opposite the projections on the rollers, we respectfully submit that there is not only no description or suggestion of this in the Thomson patent, but that such a result would be an impossibility. The Thomson patent points out (p. 2, lines 35-61) that the object of corrugating the electrodes is to increase their resistance where they contact with the work and thereby increase the heat generated in the electrodes themselves at those contact points, which heat is imparted by *conduction* to the sheets. Necessarily the heat of the sheets melts the solder at all points between the sheets reached by the heat of the sheets and there would therefor be a large area, not a series of spots of melted solder. Certainly the area of melted solder would extend throughout the length and breadth of the overlap of the sheets. No “spot soldering” or soldering in spots could possibly result. None is described in the patent.

The very fact that Thomson sought to unite metal pieces by soldering by means of heat created by the resistance to the passage of an electric current, which as compared to welding is a most ineffective weak way of joining two metal pieces together, shows that that inventor, one of the greatest in the history of electrical science, had

no conception that his idea of soldering involved or would suggest to anyone the idea of spot welding which would result in a really effective autogenous union at any point between the meeting faces of two plane sheets. Thomson, great inventor as he was, never took the mental leap from electric soldering to spot welding between plane sheets.

The idea of making a spot weld by the Harmatta process is simply not to be found in this Thomson soldering patent.

The Robinson patent No. 574,942 and the Kleinschmidt patent No. 616,436, also demonstrate that no one at their respective dates of invention, 1894 and 1898, had thought it possible or conceived the idea of uniting two *plane* sheets together by a spot weld. Both Robinson and Kleinschmidt prepared their work by making projections on the surfaces of the plates or bars involved and they merely welded the ends of those projections to the other pieces. This is a species of butt welding. Why should anyone go to the trouble and expense of creating projections, if it was obvious that two plane sheets might and could be welded together at any point in their meeting surfaces? The fact is that no one before Harmatta thought of doing that or thought of any way by which that could be done.

The only "commercial development" of electric welding in any form that appears by this record to have taken place prior to Harmatta's date of invention, which is that of the filing of his application, December 3, 1903, was that of butt welding the ends of rods, etc., according to the Thomson basic patents and a limited use of the Kleinschmidt process which was another species of butt welding. Neither of these commercial practices suggested the idea of a spot weld uniting two plane sheets of metal or suggested any method by which such a weld could be made.

The record fails to show any commercial use, prior to Harmatta, of Thomson's "electric riveting" or of his "electric soldering" or of his roller "lap-welding" or of Robinson's form of "projection welding".

The majority of the Court of Appeals for the Sixth Circuit therefore erred in assuming as a "given" premise for their conclusion that Harmatta's invention was not patentable, that "the desire for a welding in spots" was "naturally enough suggested by the prior art and by its commercial development".

The majority opinion of the Court of Appeals continues and says that—

"not only every principle but every electric and mechanical process involved in the Harmatta claims was well known in the prior or directly analogous arts or mechanical arts generally".

We respectfully submit that the Court erred in this statement. Where can one find in the prior art the "principle" involved in spot welding? Where is there suggested the possibility of welding together at a spot two plane sheets placed indiscriminately on top of one another? Every prior inventor in the welding art was obliged to prearrange or preshape his pieces to be welded as a necessary preliminary to making the weld and he did so because he had no idea of how otherwise to provide the necessary resistance to the passage of the current and because he had no other idea than that of uniting them over their entire area of contact which was butt welding. Harmatta's "principle" of dispensing with any prearrangement or preshaping of the work was absolutely new in the welding art, electric or otherwise.

His "principle" of imposing the function of concentrating or localizing the current in a spot between two such indiscriminately superimposed sheets solely on the tapered

electrodes was also absolutely new. No one before Harmatta had confined an electric current to the place to be welded, whatever its extent, solely by the shape and relative position of the electrodes themselves. Every prior inventor in that art had proceeded upon the opposite principle of prearranging or shaping the pieces to be welded whereby their parts in contact provided a path of comparatively small cross-sectional area which increased the resistance of those parts so as to generate the heat necessary for welding.

Where in any patent of the prior art is Harmatta's "principle" of applying pressure to be found? Every inventor in the prior art had welded two articles together by pressing them bodily towards one another. Harmatta dealt with a condition of sheets in extended facial contact in which such mutual bodily movement was impossible and no one before him had disclosed or suggested how to deal with such a condition. Harmatta dealt with it by applying pressure solely to the softened metal lying in the path between the two electrodes and utilized the cold unyielding surrounding metal to confine that spot of softened metal so that a very slight movement of the electrodes made the weld. That was an absolutely new "principle" of operation in electric welding. No such principle was of course involved in electric soldering because in that process no welding pressure is employed or is needed, the parts being simply held in position after the current is turned off and the solder cools.

We therefore respectfully submit that every "principle" of the Harmatta process, apart from the basic "principle" of electric welding common to all processes of that art, was new with him and involved patentable quality.

The majority opinion of the Court of Appeals for the Sixth Circuit then states that they find no invention

"separately or collectively" in certain recited characteristics of the Harmatta process.

A mere listing of those characteristics without an appreciation of their relation to Harmatta's new idea and to the problem involved of making a spot weld does not show their true significance. Harmatta after having had the new and radical thought of making a weld at any place in the meeting faces of two plane sheets of metal was confronted with the problem of how to do it. He solved that problem by the invention of new "principles" of operation. Those new "principles" involved radical departures from all previously known methods of operation and give additional and complete patentable quality to Harmatta's basic brilliant thought of making a spot weld by giving to the world a simple commercial new process for obtaining a new result, namely the new product, spot welded articles produced by that process.

Harmatta's invention is a striking example of the truth of the statement of this Court in the case of *Smith v. Nichols*, 21 Wall. 112, in which Justice Swayne said (p. 118):—

"A patentable invention is a mental result. It must be new and shown to be of practical utility. Everything within the domain of the conception belongs to him who conceived it. The machine, process, or product is but its material reflex and embodiment. A new idea may be ingrafted upon an old invention, be distinct from the conception which preceded it, and be an improvement. In such case it is patentable. The prior patentee cannot use it without the consent of the improver, and the latter cannot use the original invention without the consent of the former."

**THE HISTORY OF THE COMMERCIAL ART SHOWS
INVENTION BY HARMATTA.**

The Thomson patents of 1886 protected the business of the Thomson Company, for they covered broadly the process and product of electric welding, as Thomson's invention was a true pioneer invention, having created the art of electric welding. The Thomson patents were sustained in the suit of the *Thomson Electric Welding Company v. Two Rivers Manufacturing Company*, 63 Fed. 120, on a motion for preliminary injunction.

But the underlying Thomson patents disclose, as his only specific application of his fundamental invention, one which was of limited utility, namely, the electric welding of the butt ends of two rods. Naturally the Thomson Company was eager to extend its business of electric welding to other fields in which Prof. Thomson's generic idea could be made useful. But until Harmatta's invention, by which for the first time in the art it was practical and feasible by the use of new principles of operation to unite two thin plane sheets of metal together by electric welding *at any spot* or at several spots of their contacting surfaces, no practical application of Thomson's invention of electric welding was made beyond that of the butt welding originally disclosed by him in his patents of 1886 and some variants of that butt welding.

Numerous inventors, including Prof. Thomson himself, between 1886 and December, 1903 (the date of Harmatta's application), endeavored to promote the art of electric welding by the invention of a number of methods all based upon Prof. Thomson's butt welding idea and involving characteristics similar to those of butt welding.

The later patents of the electric welding art, which were prior to Harmatta, were attempts to meet the exigencies of welding together pieces of metal of a variety

of shapes and forms by close adherence to the specific butt welding ideas disclosed by Prof. Thomson in his patents of 1886. Except to a moderate extent in the case of the Kleinschmidt patent they were all unsuccessful and made no impression on the art.

Not one of these inventors from 1886 to 1903 suggested the idea of a spot weld or even attempted to deal with *the problem first successfully solved by Harmatta of uniting by welding two plane sheets of thin metal at any spot in their contacting surfaces.*

Each of these prior patents for electric welding was dealing with articles shaped or arranged in some particular way, *i. e.*, ends of butted rods, projections formed on plates or bars, or overlapped edges of sheets. By such shape or arrangement the current was forced through a narrow path in the work itself. There was no comparatively cold surrounding metal to be dealt with, and the movement of the contacting metals bodily towards and into one another in the process of welding was required and permitted, with the consequent extrusion of metal laterally from the welded joint. Each patentee, including Thomson in his original patents, worked on this same principle of obtaining the necessary resistance at the weld by restricting the cross-sectional area of the metal path through which the current passed, modifying that principle only by applying it to articles shaped or arranged in different ways. Harmatta discarded that principle and invented and discovered the new principle of concentrating the electric current in a path in the body of two sheets in extended facial contact by imposing that function of concentrating the current solely on the electrodes.

So far as this record shows, none of the prior electric welding processes, developed since the Thomson butt welding of 1886, ever made any impression upon the commercial arts, except to some extent that of Klein-

schmidt, which was confined to welding projections on splice bars to rail webs, a species of butt welding operation. As a practical matter, the art of electric welding was no more advanced in 1903 than it was at its inception by Thomson in 1886. No new developments had been made and none had gone into commercial use (except that of Kleinschmidt to a limited extent), although everyone engaged in the business of electric welding and skilled in that art, and particularly the Thomson Electric Welding Company, was anxious to extend electric welding to other fields besides that of butt welding. There awaited the inventor of a new application of Thomson's generic process a large reward for such an invention. Yet nobody worked out any practical way of utilizing Thomson's generic process, except by variations of Thomson's specific method of butt welding, all having the characteristics above stated of that process, until Harmatta made the invention of the patent in suit, which, while an electric welding process, was in all other respects the antithesis of the prior applications of electric welding and operated on new principles.

**PROFESSOR WAGNER'S COMPARISON OF HARMATTA'S
INVENTION WITH THE PRIOR ART.**

The Court will apprehend the radical novelty of Harmatta's invention from the fact that while other inventors in the electric welding art, following Thomson's creation of that art in 1886, merely adapted electric welding to the making of the same kind of welds that had been made before by other welding processes, Harmatta accomplished a new result, namely a spot weld, perfectly answering the purposes of a rivet, made at any point between the contacting faces of two plane sheets of metal where a rivet had formerly been employed, without the necessity of any prearrangement or modification of those sheets, which

weld had never before been made by any process of welding.

Professor Wagner, an eminent physicist and electrical engineer, professor of mechanical and electrical engineering at Rose Polytechnic Institute, Terre Haute, Indiana, has carefully considered the prior art (Vol. I, p. 331, p. 340). He states his conclusions as follows (p. 340):—

“We come now to a consideration of the Harmatta patent in suit, No. 1,046,066, dated December 3, 1912. *Harmatta undertakes to solve a problem different from those dealt with by prior inventors*, but falling also under the general line of development from the original Thomson electric welding patent. In most of the prior patents which I have considered, inventors were trying to accomplish by electric welding something which had previously been done by a blacksmith using ordinary heating methods. The original Thomson patent proposed to make butt welds of rods and bars, a thing which a blacksmith commonly did. The Thomson roller welding patent also attempted to do by electrical methods what was formerly done in metal working, namely, to make lap weld seams. Kleinschmidt performed a butt welding operation which might have been done in a well equipped forge shop, but which was novel because of necessity the work was required to be done away from a forge shop and required portable apparatus.

“Harmatta, however, attacks a problem which had never been solved by blacksmithing methods. His problem was to fasten together by electric welding flat sheets of metal placed one on top of the other. In the sheet metal art, this had been done previously by the use of rivets. Harmatta replaced rivets by electrically welding the plates at the spots where riveting would ordinarily be used. The method

employed by Harmatta was to place electrodes opposite each other with the plates to be joined lying between the electrodes; one of the electrodes was stationary, the other electrode could be moved toward the stationary electrode and forced toward it with considerable pressure. A suitable electric current was passed through from one electrode to the other and a pressure exerted upon the movable electrode. It was found that the current thus passed through the two plates pressed together would raise the metal to a welding temperature and the pressure would produce a weld.

"In the development of the art of electric welding prior to Harmatta the area of the surfaces in contact between the two pieces to be welded was always limited in extent. In the original Thomson patent the area of the ends of the rods being joined was the contact surface, and determined largely the amount of heat developed. In the Thomson and Lemp roller patents the amount of overlap of the plates restricted the area of contact surface. In the Robinson, Kleinschmidt and de Ferranti patents the size of the projections determined the contact surface, and in all these cases the completed weld was of substantially the same area as the contacting surface.

"There was, therefore, nothing in the prior art to show Harmatta that when two sheets were placed one upon the other, contacting over a large area, these sheets could be welded together in an isolated spot. I do not believe that anyone skilled in the art at the time of Harmatta's invention could have stated with any degree of assurance in advance of actual trial that Harmatta's device would produce a real serviceable weld." . . .

"For the reasons given above, it is my opinion that the flow of electricity and of heat in the practice of the

Harmatta process of spot welding is so complex that the teachings of the prior art would not suggest the Harmatta invention, and that with the knowledge and skill available at the date of the Harmatta invention it would not be possible to state whether or not the Harmatta process would be successful in producing commercially valuable welds. As a matter of fact, the Harmatta process of spot welding has proven of immense commercial value, and the fact that the operation seems so simple after it has once been accomplished should add to rather than detract from the merit of the invention. It is the more remarkable in that the fundamental Thomson electric welding patent antedates the Harmatta invention by some seventeen years; and that, while the art was developed in a number of other directions, the development of spot welding waited so long. The reason for this seems to me to be that in the other lines of development of electric welding the attempt was made to accomplish by electric welding what had previously been done by other metallurgical or blacksmithing operations. *Harmatta struck out in a new field and accomplished something which had never before been accomplished by any method, namely, the welding together at isolated spots, and without previous preparation, parallel, superimposed metal sheets."*

HARMATTA'S PROCESS INTRODUCED INTO THE UNITED STATES IN 1904.

The spot welding process of the Harmatta patent was first introduced into the United States in 1904 directly from Harmatta by the purchase of a license for kitchen ware and like articles by the National Enameling & Stamping Company from the Eisenhutte Silesia Company of Hungary, the owner of Harmatta's rights. The license dated December 3, 1904, is in evidence (Vol. I, p. 433). With the license the National Company purchased two Harmatta spot welding machines which are now in its factory and have been in constant use up to the present time. Since then the National Company has built and used between eighty and one hundred spot welding machines. These facts are established by the testimony of Mr. Knapp, the general director of the National Company (Vol. I, p. 125). Undoubtedly this extensive use of the Harmatta process and the sale of its products by the National Company beginning in 1904 spread the knowledge of Harmatta spot welding throughout the United States.

INFRINGEMENT.

Infringement by the defendant is established by the plaintiff's interrogatories and the defendant's answers thereto (Vol. I, pp. 20-23) and is not denied. Those interrogatories and answers are stipulated to have the same force as a deposition (Vol. I, p. 24).

According to these interrogatories and answers, the defendant, the Ford Motor Company, has been practicing during the period between December 3, 1912, and the filing of the bill of complaint, at its factory in Detroit, the Harmatta spot welding process by means of a number of spot welding machines purchased from the Winfield

Electric Welding Machine Company prior to December 16, 1916.

These machines are correctly represented in the drawing (Vol. I, p. 22, and *supra*, p. 14).

In these machines the copper electrodes are tapered and are connected respectively to the terminals of a secondary circuit of an electric transformer. In operating these machines the operator places two or more superimposed thicknesses of metal constituting the work between the electrodes, presses the electrodes against the work and passed the electric current through the electrodes and through the work at the spot between the electrodes controlling the current by means of a switch. When the weld is completed the current is cut off and the electrodes separated from the work.

The defendant has practiced this process in its manufacture of mufflers, radiators, fenders, bodies and other parts of its automobiles (Vol. I, p. 23).

Plaintiff's Exhibit No. 2, a spot welded part of a muffler, is a fair example of the products produced by the defendant as a result of practicing the Harmatta process (Vol. I, pp. 20, 23).

The plaintiff's expert, Gravell, with reference to the defendant's process and product testified (Vol. I, p. 64):—

“An example of the product of the process is shown in Exhibit No. 2 illustrating how the process is repeated a number of times on the same article to produce a number of welds.

“The exhibit shows a number of isolated welds, which are technically known as ‘spot welds’.

“It is evident that the metal heated for welding has been confined by relatively cold metal and that no extruded metal has occurred. (In one case the metal from the weld has extruded, but this is a defective weld.)

"It is also clear from Exhibit No. 2 that the superimposed thicknesses of metal did not move in relation to each other during the process, for prior to the processing these parts were placed in close overlapping contact and could not possibly move. This is especially clear when we consider that after the first weld was made the two parts were locked together.

"The answers to the interrogatories considered in connection with Exhibits Nos. 1 and 2 clearly describe the same process as is described in Harmatta's specification.

"In both cases pointed electrodes concentrate the current and the pressure which are applied to the superimposed thicknesses of metal which constitute the work, the weld occurs in the work between the electrodes and is restricted to the spot where the current and pressure are concentrated. During the welding process the superimposed parts do not move in relation to each other, the metal heated for welding is confined by relatively cold metal and no extruded metal is produced.

"I know of my own knowledge that the answers to the interrogatories are correct and that the Harmatta process is used at the Detroit plant of the Ford Motor Co., for on January 9, 1918, I visited the Ford plant and saw machines arranged to carry out the Harmatta process shown in Exhibit No. 1, and I personally operated one of these machines and found that it produced a spot weld according to Harmatta's process. The specimen which I welded I here produce."

The defendant has, therefore, practiced the exact Harmatta process set forth in the patent in suit and made by that process the Harmatta product. It has therefore infringed all of the claims of the patent.

Neither in the District Court nor in the Court of Appeals, has the defendant denied infringement.

SUMMARY OF FACTS SO FAR DISCUSSED.

The plaintiff, the Thomson Spot Welder Company, is engaged in the business of manufacturing, selling and leasing electric welding machines by means of which the process described and claimed in the Harmatta patent is carried out and the welded articles to which some of the claims of the Harmatta patent are directed are produced.

The defendant has infringed and makes no attempt to deny its infringement.

The sole question, therefore, is whether the Harmatta patent is valid.

As to this question the record establishes certain fundamental facts:

That the invention, colloquially known as "spot welding", described in the Harmatta patent is based upon the idea of making, and results in a *weld* between two *plane* sheets of metal *indiscriminately superimposed* upon one another in unlimited unpredetermined extent of contact, which weld is made *at any spot* in their meeting surfaces and *which answers perfectly the purpose of a rivet*.

That before December 3, 1903, the date of filing of Harmatta's application, no patent or printed publication disclosed that idea or described a process which produced or purported to produce that result. *Spot welding was absolutely new with Harmatta.*

That Harmatta described and made practical a *new method of manipulating sheets to be welded*, namely the superimposing of two plane sheets *indiscriminately* one upon the other in unlimited unpredetermined extent of *facial* contact and without any reshaping of those sheets, as by the creation of projections thereon. It was absolutely new with Harmatta to get rid of the requirement, neces-

sarily present in all preceding methods of welding, of any special relative arrangement of the pieces to the welded or of preshaping those pieces.

That Harmatta described new instrumentalities to be used in electric welding, namely tapered electrodes to concentrate the current.

That Harmatta was the first inventor in the art to impose the function of concentrating or localizing the welding current solely on to the electrodes.

That Harmatta discovered a fact, never before known, namely that in two plane sheets in indiscriminate extended facial contact a welding current would be confined by tapered electrodes to the path in the sheets between the ends of those electrodes to heat the spot in that path between the faces of such metal sheets. No one knew that fact before Harmatta's discovery of it. It was not warranted by established electrical theory.

That Harmatta disclosed the fact, previously unknown, that by the use of such electrodes a weld could be made between two such sheets of metal, without moving them bodily towards one another, by pressing on heated metal only, which heated metal was surrounded by cold unyielding metal.

That Harmatta's invention was first introduced commercially into the United States in 1904 by the National Enameling and Stamping Co., as stated (*supra*, p. 92), and has been practiced continuously and successfully since then by Harmatta's licensees and assignees.

That the invention of spot welding described in the Harmatta patent has gone into the most successful commercial use in welding sheet metal articles of every conceivable kind. *Billions of spot welds* are made every year by plaintiff's licensees, and billions are made by infringers.

That Harmatta's invention of spot welding created a branch of the art of electric welding which is of greater commercial utility than that of all other kinds of electric

welding added together (Gravell, Vol. I, p. 63). It has taken a position in the metal working arts of unquestioned industrial pre-eminence.

Under these circumstances the defendant's main contention that Harmatta's invention is lacking in patentable quality must certainly fail.

PATENTABILITY OF THE IDEA OF ELECTRODE SPOT WELDING.

The invention in the Harmatta patent lies fundamentally in Harmatta's strikingly novel idea of the isolated electrode spot weld made from the metal of the plane, flat surfaces of two thin sheets of metal indiscriminately superimposed one on the other, at any spot between them, whereby the sheets are joined together more cheaply and more strongly than they could be joined by a rivet. This idea he carried out by solving a new problem and by devising new principles of operation and a process having new characteristics. He was not merely welding by electricity two things that had been welded before by other means, but he had the new idea of "welding together at isolated spots and without previous preparation, parallel superimposed metal sheets", which was "something which had never before been accomplished by any method" as above stated by Professor Wagner. So different was the problem that Harmatta solved from any that had been dealt with by any one before him that his invention involved principles of operation and characteristics which are exactly the opposites of those of the electric welding processes of the prior art except in so far as they all involve the basic principles of electric welding.

Such a spot weld made between such plane superimposed sheets of metal at any point in their meeting surfaces was an absolutely new result in the art. No one had ever made such a weld before.

Even if each of the steps involved had been old in the art, which is not the case, the fact that Harmatta's invention attained this new result is the best evidence of invention.

In *Loom Company v. Higgins*, 105 U. S. 580, this Court in sustaining a patent for a new arrangement of old elements in a loom which raised the output of the loom from 40 to 50 yards per day said (p. 591):—

“It may be laid down as a general rule, though perhaps not an invariable one, that if a new combination and arrangement of known elements produce a new and beneficial result, never attained before, it is evidence of invention.”

This language has been quoted with approval by this Court in *Carnegie Steel Company v. Cambria Iron Company*, 185 U. S. 403, 446.

In *Expanded Metal Company v. Bradford*, 214 U. S. 366, this Court in sustaining a patent for a new method of making reticulated metal said (p. 381):—

“It is perfectly well settled that a new combination of elements, old in themselves, but which produce a new and useful result, entitles the inventor to the protection of a patent.” Citing *Loom Company v. Higgins*, 105 U. S. 580, 591.

The steps of the process by which Harmatta achieved his new result, except insofar as they embodied old principles of electric welding, were absolutely new.

They were, *first* the indiscriminate placing of two flat sheets upon one another without regard to the extent of their facial contact. No one had ever done this before in any kind of welding, blacksmith or electric. The very lack of a predetermined relation between the sheets is a feature of Harmatta's process which gives it not only

novelty but widespread application to all kinds of articles made of sheet metal in which the sheets of necessity can not be placed in a predetermined limited relation as was required by all welding processes of the prior art.

Second, Harmatta's concentration of the welding current to a path in those sheets between the ends of two tapered electrodes was an absolutely new electrical feat involving a new discovery that the welding current would confine itself under those conditions to that path.

Third, the completion of the welding by the slight but firm movement of the electrodes themselves bearing upon softened metal on each side of the spot to be welded without moving the sheets bodily was an absolutely new step in the welding art. No one had ever done that before.

Harmatta's new result was therefore achieved by new series of steps, each one of which was in itself new.

There are many cases in which this court has sustained patents for processes in which there was far less novelty in the several steps constituting those processes.

AUTHORITIES ON PATENTABLE PROCESSES.

This Court has held consistently that a process is patentable when based upon a new idea in the treatment of materials.

In *Mowry v. Whitney*, 14 Wall. 620, this Court held valid and infringed a patent for a process of casting car wheels. According to the prior art, a car wheel was cast in a mould, around the periphery of which was a metal rim, whereby the tread of the wheel was chilled quickly, thereby making it hard, while the centre of the wheel cooled slowly, thereby making it tough, but the difficulty was that, due to the unequal rate of cooling, the metal drew away from the centre and often broke. Whitney's improvement consisted in the idea of inserting the car wheel, after the rims had been chilled but before the rest of the wheel had

chilled, into a furnace where the whole wheel was again heated, after which it was allowed to cool slowly.

The court said (p. 642):—

“The novelty of the patentee’s invention is not therefore disproved by evidence that glass, or speculum metal, or even other iron casings had been annealed and slow-cooled, prior to the time when it was made. Of this there is very considerable evidence both in the testimony of witnesses and printed publications. The specification disclaims invention of annealing iron castings done in the ordinary mode. It claims annealing when applied to cast-iron railroad wheels, in the mode or by the process described. It is not therefore merely an old contrivance or process applied to a new object, a case of double use. A new and previously unknown result is obtained, namely, the relief of the plate of the wheels from inherent strain without impairing the chilled tread, a result which, though anxiously sought, had not been obtained before Whitney’s invention. We are therefore of opinion that the defence set up that the patent was void for want of novelty of invention is unsustainable.”

In *Lawther v. Hamilton*, 124 U. S. 1, this Court held valid and infringed a patent for the process of extracting oil from cotton seed, the novelty of which consisted in omitting the use of muller-stones which were used in previously employed processes for crushing the seed, and instead crushing the seeds between heavy rollers.

The court said (p. 11):—

“We cannot but think that Lawther discovered a new process of manufacturing oil from seeds, and that he was entitled to a patent therefor; and we are of the opinion that the patent in suit, construed as we have suggested, is a good and valid patent.”

In *Tilghman v. Proctor*, 102 U. S. 707, this Court held valid a patent for a process of making glycerine which consisted in manufacturing glycerine from fatty bodies by the action of water at high temperature and pressure.

In *Expanded Metal Co. v. Bradford*, 214 U. S. 366, this Court held valid and infringed a patent for making expanded metal sometimes known as "reticulated" metal, which is a metal screen having diamond-shaped openings formed by cutting a metal sheet in slits and then pulling the cut metal so as to open the slits.

Previous to the invention of the patent in suit the metal after being cut had been merely bent, thereby producing irregularities and shortening the sheet crosswise. By the process of the patent in suit the metal sheet was simultaneously cut and stretched to form the diamond-shaped openings.

The court found patentable invention in the improvement, and said (p. 381): —

"It is suggested that Golding's improvement, while a step forward, is nevertheless only such as a mechanic skilled in the art, with the previous inventions before him, would readily take; and that the invention is devoid of patentable novelty. It is often difficult to determine whether a given improvement is a mere mechanical advance, or the result of the exercise of the creative faculty amounting to a meritorious invention. The fact that the invention seems simple after it is made does not determine the question; if this were the rule many of the beneficial patents would be stricken down. It may be safely said that if those skilled in the mechanical arts are working in a given field and have failed after repeated efforts to discover a certain new and useful improvement, that he who first makes the discovery has done more than make the obvious improvement which would suggest

itself to a mechanic skilled in the art, and is entitled to protection as an inventor. There is nothing in the prior art that suggests the combined operation of the Golding patent in suit. It is perfectly well settled that a new combination of elements, old in themselves, but which produce a new and useful result, entitles the inventor to the protection of a patent. *Loom Company v. Higgins*, 105 U. S. 580-591.

"To our minds, Golding's method shows that degree of ingenuity and usefulness which raises it above an improvement obvious to a mechanic skilled in the art, and entitles it to the merit of invention. Others working in the same field had not developed it, and the prior art does not suggest the combination of operations which is the merit of Golding's invention."

In *Carnegie Steel Co. v. Cambria Iron Co.*, 185 U.S. 403, this Court held valid and infringed the Jones patent for a method of mixing molten pig-metal, the gist of which consisted in providing a large reservoir into which the molten metal from different furnaces was delivered and from which the molten metal was drawn off to be treated in the converters, there always being enough molten metal in the reservoir to constitute a "dominant pool" so that the variations in the metal coming from the different furnaces were eliminated by the blending of all the metal in the reservoir. The novelty consisted in the idea of this dominant pool, which was never exhausted.

The court, referring to certain prior devices which might have been used to carry out the process of the patent, made the following statement, which is particularly pertinent to the defendant's argument on the prior art in this case (p. 421):—

"This defence presents the common instance of a patent which attracted no attention, and was com-

mercially a failure, being set up as an anticipation of a subsequent patent, which has proved a success, because there appears to be in the mechanism described a possibility of its having been, with some alterations, adaptable to the process thereafter discovered. As hereinafter observed, a process patent can only be anticipated by a similar process. It is not sufficient to show a piece of mechanism by which the process might have been performed."

And again on page 425 the court said:--

"If the mere fact that a prior device might be made effective for the carrying on of a particular process were sufficient to anticipate such process, the absurd result would follow that, if the process consisted merely of manipulation, it would be anticipated by the mere possession of a pair of hands."

On the question of invention as distinguished from mechanical skill the court said (p. 429):--

"It is true the Jones patent is a simple one, and in the light of present experience it seems strange that none of the expert steel makers, who approach so near the consummation of their desires, should have failed to take the final step which was needed to convert their experiments into an assured success. This however, is but the common history of important inventions, the simplicity of which seems to the ordinary observer to preclude the possibility of their involving an exercise of the inventive faculty."

The court concluded its opinion by quoting the law from *Loom Co. v. Higgins*, 105 U. S. 580, 591, as follows (p. 446):--

"We cannot better conclude this opinion than by

the following extract from the opinion of Mr. Justice Bradley in *Loom Co. v. Higgins*, 105 U. S. 580, 591: 'But it is plain from the evidence, and from the very fact that it was not sooner adopted and used, that it did not, for years, occur in this light to even the most skillful persons. It may have been under their very eyes, they may almost be said to have stumbled over it; but they certainly failed to see it, to estimate its value, and to bring it into notice. . . . Now that it has succeeded, it may seem very plain to any one that he could have done it as well. This is often the case with inventions of the greatest merit. It may be laid down as a general rule, though perhaps not an invariable one, that if a new combination and arrangement of known elements produce a new and beneficial result, never attained before, it is evidence of invention'."

These cases are fair examples illustrating the rules of law applicable to patentable processes. In each of these cases there was a novel idea, corresponding to Harmatta's novel idea of electrode spot welding. The Harmatta conception of electrode spot welding involved patentable invention as truly as the idea of a dominant pool in steel making, the idea of simultaneously stretching as well as cutting the sheet of metal to form expended metal, the idea of reheating and slowly cooling the car wheels, the idea of eliminating the crushing of the cotton seeds by muller-stones, and the idea of using water at high heat and pressure to extract glycerine from fatty bodies.

In all these processes the invention is in the conception of the treatment to which the material acted upon is subjected and not in the mechanism by which the process is carried out. Just because this is true in the case of a process it is easy to say that this new idea, which seems so

simple now that it is known, did not involve invention, and that the devices of the prior art could be easily modified so as to carry out the process of the patent in suit.

But the answer is that no one before had the necessary and lacking idea, so that, although there existed the latent demand, it was not satisfied until the idea was conceived.

This required invention.

In this case the process of electrode spot welding, of which Harmatta undisputably was the first inventor, dealt with and solved a new problem. It involved new principles of operation and new characteristics. It is not described or suggested in the prior art and it produced a new and valuable result, namely, thin sheets of metal united together at any spot on their meeting faces by an electric weld answering all the purposes of a rivet. No one had ever thought of doing this before by any process of welding, electrical or otherwise.

The process has gone into very wide commercial use and has enabled manufacturers of sheet metal articles to make these articles more cheaply and more strongly than they could by riveting them, and also to make a large number of articles which they could not make by riveting because the rivet heads would have marred the appearance of the article and because the union must be made at spots where the shape of the article prevents the use of a rivet.

CASES OF PATENTABLE ARTICLES ANALOGOUS TO THE HARMATTA PRODUCT.

The Harmatta process produced a product which had never before been attained in the art. It consists of two thin metal sheets or plates with their inner contacting or meeting faces welded, so as to form an intimate union, at distinct and separate or isolated points, such isolated welds, which are formed solely from the metal of the sheets or plates, securing them together and practically making them into one integral article.

This product has been embodied in all kinds of articles and proved its thorough usefulness in the commercial world as shown by the uncontradicted testimony of Mr. Cutter (Vol. I, pp. 133-137). Before Harmatta made his invention no such product existed, and no such product is suggested by the prior patents introduced in this case, as we have shown above. The article is a new combination of elements, namely, the two sheets and the isolated spot welds by which they are joined together. It is a new and useful combination which under the authorities is patentable. We cite a few analogous cases from the decisions of this Court:—

Barbed Wire Patent, 143 U. S. 275.

The patent was for a barbed wire fence consisting of two strands of wire twisted together, around one of which was coiled short pieces of wire or barbs held in place by the other strand. The prior art disclosed a barbed wire fence having two strands twisted together, on one of which was strung diamond-shaped prongs of flat metal.

Patentability turned on the question whether there was invention involved in simply using a coil of wire instead of a diamond-shaped piece of flat metal as the barb. The device of the patent had met with success.

The Supreme Court held (p. 282) as follows:—

“Under such circumstances courts have not been reluctant to sustain a patent to the man who has taken the final step which has turned a failure into a success. In the law of patents it is the last step that wins. It may be strange that, considering the important results obtained by Kelley in his patent, it did not occur to him to substitute a coiled wire in place of the diamond shape prong, but evidently it did not; and to the man to whom it did ought not to be denied the quality of inventor.”

Krementz v. Cottle, 148 U. S. 556.

The patent was for a collar button made of one piece of metal as compared with the prior art showing collar buttons made out of several pieces of metal soldered together.

The Supreme Court said (p. 559):—

“It is not easy to draw the line that separates the ordinary skill of a mechanic, versed in his art, from the exercise of patentable invention, and the difficulty is specially great in the mechanic arts, where the successive steps in improvements are numerous, and where the changes and modifications are introduced by practical mechanics. In the present instance, however, we find a new and useful article, with obvious advantages over previous structures of the kind. A button formed from a single sheet of metal, free from sutures, of a convenient shape, and uniting strength and lightness, would seem to come fairly within the meaning of the patent laws.”

Diamond Rubber Co. v. Consolidated Rubber Tire Co. and Rubber Tire Wheel Co., 220 U. S. 428, 434.

In this case the patent covered the holding of a solid rubber tire in the U-shaped channel of a wheel by two circumferential wires instead of cementing it in place.

“The tire has utility, a utility that has secured an almost universal acceptance and employment of it, as will subsequently appear. It was certainly not an exact repetition of the prior art. It attained an end not attained by anything in the prior art, and has been accepted as the termination of the struggle for a completely successful tire. It possesses such amount of change from the prior art as to have received the approval of the Patent Office, and is entitled to the

presumption of invention which attaches to a patent. Its simplicity should not bind us as to its character. Many things, and the patent law abounds in illustrations, seem obvious after they have been done, and, 'in the light of the accomplished result', it is often a matter of wonder how they so long 'eluded the search of the discoverer and set at defiance the speculations of inventive genius' (*Pearl v. Ocean Mills et al.*, 11 Off. Gaz. 2). Knowledge after the event is always easy, and problems once solved present no difficulties, indeed may be represented as never having had any, and expert witnesses may be brought forward to show that the new thing which seemed to have eluded the search of the world was always ready at hand and easy to be seen by a merely skillful attention. But the law has other tests of the invention than subtle conjectures of what might have been seen and yet was not. It regards a change as evidence of novelty, the acceptance and utility of change as a further evidence, even as demonstration . . . if he has added a new and valuable article to the world's utilities he is entitled to the rank and protection of an inventor."

THE CLAIMS.

Of the claims of the Harmatta patent it will be sufficient to quote, as typical, claims 3, 8, 12 and 17, which are as follows:—

"3. *The herein described method of uniting two pieces of metal, consisting in pressing them together while passing a heating electric current from one to the other and localizing the flow of current and the heating throughout the operation in a spot or spots of circumscribed or limited area as compared with the area of the immediately opposed surfaces so as to limit the union of the pieces to a spot or spots.*"

"8. The method of electrically welding two plates or sheets of metal together face to face between electrodes, consisting in *restricting the area of contact of an electrode with said plates to a spot*, passing a heating electric current from said electrode to the co-operating electrode through said spot to heat the work to welding temperature and *applying pressure to the work in line with said spot* to effect a welding of one plate to the other."

"12. The method of electrically welding two pieces of sheet metal to one another, consisting in pressing the sheets together by *pressure applied and localized in a distinct well-defined point or spot on the rear surface of a sheet* while passing an electric current through them in the line of the pressure, thereby *localizing the path of the heating current* from one to the other of the meeting surfaces of the sheets to cause the said sheets to be heated to welding temperature by the electric resistance of the work at said spot, and *applying pressure localized over said spot* whereby the pieces are welded together at a distinct well defined spot in their meeting surfaces *answering the purposes of a rivet.*"

"17. Metal plates fastened together by a number of *distinct or isolated welds on their meeting surfaces* and in spots *comprising meeting portions* of the metal plates, the backs of said plates being practically unaltered in their metallic condition and the spots on the meeting surfaces being separated from one another by distinct unwelded areas."

Each of the method claims of the patent clearly defines the precise process of spot welding described in the specification of the Harmatta patent employing the localizing of the current by pointed electrodes to affect new modes of

electric and thermal operation, and the localizing of the pressure to act upon the spot to be welded which is surrounded by and integral with colder metal.

The product claims of the Harmatta process likewise define the specific spot welded product obtained by the Harmatta process in which the welded spots are formed from the metal of the plane sheets themselves.

Claims 7 to 16 of the Harmatta patent define in limited terms Harmatta's specific process of making spot welds in two plane sheets in facial contact by means of localizing the current and pressure by pointed electrodes.

The process claims, 1 to 6, and the product claims, 17 to 21, are expressed in somewhat broader terms, but in this case it is not necessary for the Court to give them any other or broader construction than as covering the specific process and its product described in Harmatta's specification. The defendant makes the precise Harmatta product by the specific Harmatta process.

CASES ON CONSTRUCTION OF CLAIMS.

It is a well established principle of law that the claims of a patent should be construed in accordance with the specification to cover the actual invention made by the patentee.

This fundamental principle of law is stated by the Supreme Court in *Rubber Company v. Goodyear*, 9 Wall. 788, 795:—

“A patent should be construed in a liberal spirit, to sustain the just claims of the inventor. This principle is not to be carried so far as to exclude what is in it, or to interpolate anything which it does not contain. But liberality, rather than strictness, should prevail where the fate of the patent is involved, and the question to be decided is whether the inventor shall hold or lose the fruits of his genius and his labors.”

In *Wicke v. Ostrum*, 103 U. S. 461, the Supreme Court said (p. 568):—

“To make the claims of his letters-patent intelligible, they must be read in connection with the specifications to which they relate.”

Where, as in this case, the product of the process is new it is well settled that the product claims should be held valid as covering the new product made by the process described in the patent. See

Cochrane v. Badische Anilin & Soda Fabrik, 111 U. S. 293, 296-310.

Smith v. Goodyear Dental Vulcanite Co., 93 U. S. 486, 493.

Downes v. Teter-Heany Development Co., 150 Fed. Rep. 122, C.C.A. 6th Cir.

Inasmuch as the defendant has practiced the exact process set forth in the Harmatta patent and has produced the articles made by that process, it has infringed all the claims of the patent when those claims are construed, no matter how narrowly, to cover that process and its product.

CHAPTER II.

THE HARMATTA FILE-WRAPPER

(Vol. II, pp. 1353-1466).

The history of the application for the Harmatta patent in the United States Patent Office is nothing but the usual story of the struggle of an applicant to obtain a patent for his real invention. Harmatta was especially handicapped in being a foreigner living in Hungary and he was further unfortunate in the selection of solicitors who were Canadians. In spite of these handicaps Harmatta through his solicitors persistently endeavored from the beginning to frame claims, based on the clear disclosure in his application as originally filed of the spot welding invention ultimately patented in the patent, which claims would meet the approval of the Patent Office.

Harmatta's original specification describes not only the process of spot welding, which necessarily results in the spot welded articles (pp. 1360, 1361), but also a process of *line* welding with beveled edge rollers. The roller process was almost immediately eliminated from the application by the amendment of May 10, 1904.

We are not concerned with this line roller welding but with that part of Harmatta's original specification which describes his spot welding process by which he obtained the spot welded articles.

His original specification stated (p. 1356):—

“My invention relates to a process of and apparatus for manufacturing metal articles of all kinds, in particular those of the thinnest sheet metal by direct electric welding.”

In this statement Harmatta definitely placed his invention in the art of electric welding created by Professor Thomson in which the welding heat is created directly in

the work itself at the joint between the articles to be welded by the resistance at and near that joint to the passage of the electric current which was of small voltage and large volume. He definitely excluded those processes which are not electric welding and which employ indirect methods of heating, such as electric arc (Benardos U. S. patent) or hot blocks (Benardos German patent) or by conduction (Thomson riveting patent No. 396,015).

As we have above pointed out, the conditions, inherent in direct electric welding, require the use in the welding circuit of conductors and electrodes of very low resistance, commonly made of copper and of large cross-section. They are so shown in the drawings (p. 1466) accompanying Harmatta's original specification.

The figures of the original application were six in number; of these figures 1 and 5 are figures 1 and 2 of the issued patent and the two parts of original figure 6 are figures 4 and 5 of the patent.

Figures 2 and 3 of the original specification show rollers for continuous *line* welding. These rollers are narrowed and pointed at the edges, so that, while having nothing to do with spot welding, they embodied Harmatta's new principle of operation of concentrating the current by the shape of the electrodes themselves. This is a distinct departure from the disclosure of the Thomson lap welding patent No. 444,928, in which the rollers are wide and overlap the work so that the work itself, and not the electrodes, concentrates the current and determines the extent of the weld. All reference to rollers in the specification was cancelled May 10, 1904 (p. 1366). At this time the figures of the drawings which relate to line roller welding were also eliminated. From this date the application described solely pointed electrode spot welding.

Concerning Fig. 1 (Fig. 1 of the patent) showing the pointed electrodes localizing or concentrating the current

and pressure for spot welding the original specification states (p. 1357):—

“Fig. 1 is a view illustrating the welding of two metal sheets of equal thickness, intermittently or at certain *spots* only.”

Of Fig. 5, now Fig. 2 of the patent, the original specification says:—

“Fig. 5 is a side elevation of a welding device (also illustrated in part in Fig. 1) according to which the pressure is exercised by pin shaped electrodes, the form of which may be suited to the particular purpose in view, and which may be adapted to work on the smallest possible surface of contact.”

The electrode spot weld is described as follows (p. 1358):—

“As Fig. 1 shows, the two sheet metal or other bodies, the edges of which lie upon each other, are introduced between the two electrodes *a, b*. Of the latter the one, somewhat prior to welding or only during the welding operation, is pressed upon the other, as the arrow shows; or both electrodes may be caused to exert pressure on the objects to be welded.”

The electrode spot welding is further described in the original specification (p. 1360):—

“Thus if it is required to weld, for instance, sheets of metal only at particular places, the apparatus shown in Fig. 5 may be advantageously employed, the electrodes *a, b* having the form of pins. The lower electrode *b* is then inserted in the conductor *d* whilst the upper electrode *a* is carried by an arm *s* and can be turned by means of a hand-lever *t* carried by said arm *s* on the shaft *u* in such manner that the

points of the electrodes a, b approach and recede from each other. If then two superposed sheet metal ends to be welded together are introduced between the electrodes, and the latter then firmly pressed together and the circuit closed, a small round, very sharply defined place of welding is caused which perfectly answers the purposes of a rivet. In this event, also, especially in the case of thin vessels, which are not required to withstand great pressure, the pressure on the place of welding may at the right moment be exactly regulated or kept within the proper limits."

This is a full and accurate description of the process of electrode spot welding which necessarily results in the spot welded articles.

This description is entirely adequate as a basis for both the method and article claims of the issued patent.

Of the claims of the original specification, the first two covered the process of electrode spot welding and were broad enough also to cover Harmatta's roller line welding which later he elected not to cover. Claims 3 and 4 were limited to roller line welding only (pp. 1361, 1362).

It seems to us unnecessary to follow in this brief the various amendments of the specification and claims by which the claims were limited from time to time. From these amendments it appears clearly that, instead of expanding his application, Harmatta was constantly making it more specific, and that he was at all times seeking a suitable claim to protect his invention.

For example, the claim accompanying the amendment of May 14, 1904, calls for—

"The process of electrically welding thin sheets and the like, consisting in applying pressure at the place of welding of the two superposed metallic objects to be united, etc." (Vol. II, p. 1373.)

This claim was cancelled and another claim substituted in an amendment of November 26, 1904. This claim calls for an electric welding process—

“Consisting in first pressing intimately together the two superposed metallic objects *at the very point* at which the welding joint is to be formed, and then whilst maintaining the intimate pressure, heating the objects by passing an electric current through them exactly *at said point* in which the welding is to be effected” (p. 1375).

This claim is unquestionably directed to Harmatta's process of spot welding.

Of the three claims filed in the amendment of November 17, 1905, the first calls for—

“Passing an electric current through them [the sheets] *exactly at said point*, in which the welding is to be effected” (p. 1385).

The second claim calls for—

“a pressure limited to a material *point*” and
“a current also limited to said material *point*”
(p. 1385).

In the substituted claim filed with the amendment of May 18, 1906, the process is described as—

“applying suitable electrodes on the metallic objects *at the very point* at which the welding joint is to be formed”, and applying the pressure and current
(p. 1395).

The substitute specification filed December 3, 1906, contains a good description of the process of electrode spot welding. This specification says (p. 1399):—

“My process consists in applying suitable electrodes

on the metallic sheets *at the very point* at which the welding joint is to be formed, then causing said electrodes to exert a pressure on the metallic sheets sufficiently to press the metallic sheets intimately together *at the point* at which the welding joint is to be formed, then heating the metallic sheets by passing an electric current through said electrodes and through the metallic sheets, and finally maintaining the pressure of said electrodes on the metallic sheets during the passage of the electric current through the electrodes and metallic sheets."

(p. 1402:) "*At the place where the electrodes a, b exert pressure* therefore (Figs. 2 and 3), that is to say, where the current is able to flow through the bodies to be welded without having to pass through a layer of air and form sparks, *the metal is heated to welding heat.* Immediately this temperature is reached, the continuous pressure effects the desired union, that is to say, welding of the two thin metallic sheets 5 and 6, without injury by perforation or burning, in the manner explained, having taken place, even if the sheets are extremely thin."

The claim accompanying this specification (p. 1403) is in substance a repetition of the first paragraph of the description just quoted. It is plainly an attempt to define the process of electrode spot welding, the spot being referred to as a "point". This claim was rejected December 15, 1906 (p. 1404), and was cancelled and two new claims filed December 5, 1907 (p. 1405). The second of these claims clearly defines electrode spot welding, as follows (p. 1405):

"2. The process of electrically welding *thin* metallic sheets, consisting in *applying suitable electrodes on the metallic sheets at the very point of which the welding joint is to be formed*, then causing said electrodes to

exert a maximum pressure on the metallic sheets sufficiently to press the metallic sheets intimately together *at the point* at which the welding joint is to be formed, then heating the metallic sheets by passing an electric current through said electrodes and through the metallic sheets, and maintaining the maximum pressure of said electrodes on the metallic sheets during the passage of the electric current through the electrodes and metallic sheets."

This claim, while not as good a definition of electrode spot welding as are the claims of the issued Harmatta patent, is objectionable only because of its possible breadth.

The claim was finally rejected in the Patent Office action of February 9, 1909 (p. 1411), in which the Patent Office said:—

"It is thought that if there is any patentable matter in this case it resides in the securing of the sheet metal parts together by means of the small round, sharply defined place of welding which answers the purpose of a rivet, as is set forth on page 6 of the original specification."

This states the invention exactly.

Harmatta adopted this suggestion of the Patent Office in his amendment of January 28, 1910, in which he filed an amended specification (pp. 1414-1417) with two claims aimed more specifically at the electrode spot welding process. In the remarks accompanying this specification he said (p. 1412):—

"Great care has been taken not to describe anything which was not illustrated or explained in the original disclosure."

In the next Patent Office action of March 22, 1910 (p. 1418), claim 2 was said to be allowable, and claims 1,

5, 6, and 16-20 of the Rietzel patent No. 928,701, issued July 20, 1909, were suggested to Harmatta under the provisions of Patent Office Rule 96 for the purpose of exciting an interference. Thereupon in an amendment March 31, 1910, Harmatta added these Rietzel claims to his application.

The interference was declared April 26, 1910 (p. 1425), and to it claims 2-4 of Rietzel were added June 12, 1911 (p. 1430). This interference was decided in favor of Harmatta, October 17, 1912 (p. 1431). On October 23, 1912, Harmatta filed the specification and claims now appearing in his patent and the application was allowed October 31, 1912 (p. 1454).

There is nothing in the history of this Harmatta application but the common history of an applicant who has amended his application both as to the specification and claims in such a way as to define accurately the nature and scope of his invention.

Harmatta's original application included both electrode spot welding and line roller welding. Claims on the latter were rejected by the Patent Office and were dropped from his application by his amendment of May 10, 1904 (p. 1366), although we believe that he was entitled to claims properly limited to that process which was new with him.

Electrode spot welding he saw was new and he persisted from the beginning in seeking a claim adequate to protect that invention. He never desisted in his efforts to obtain suitable claims and when the Patent Office pointed out to him that his claims were too broad and that they should be limited to the making of a spot weld that would take the place of a rivet he proceeded to cut down the scope of his claims and to limit them more closely to his specific process and its product.

Harmatta had the right to use the knowledge that he

obtained from the art, including the Rietzel patent, to enable him to define properly and accurately his invention. There is nothing in the patent that is not fully described in the original specification. *The drawings are the same as those of the original specification. The claims both for his process and his product read upon the original description and drawings. Harmatta, therefore, was clearly entitled to these claims.*

The law is well established. It is stated in *General Electric Company v. Cooper Hewitt Electric Company*, 249 Fed. Rep. 61, C. C. A. 6th Cir., p. 64:—

“The rule is that insertions by way of amendment in the description or drawing, or both, do not hurt the patent, if the insertions are only in amplification and explanation of what was already reasonably indicated to be within the invention for which protection was sought—‘something that might be fairly deduced from the original application.’ *Hobbs v. Beach*, 180 U. S. 383, 395, 21 Sup. Ct. 409, 45 L. Ed. 586; *Cleveland Co. v. Detroit Co.* (C. C. A. 6) 131 Fed. 753, 857, 68 C. C. A. 233; *Proudfit Co. v. Kalamazoo Co.* (C. C. A. 6) 230 Fed. 120, 123, 144 C. C. A. 418; *Cosper v. Gold*, 36 App. D. C. 302.”

See also:

Hobbs v. Beach, 180 U. S. 383.

Western El. Co. v. Sperry Co., 58 Fed. 186, C. C. A. 7th.

Gen. El. Co. v. Morgan Gardner Co., 168 Fed. 52, C. C. A. 7th.

Process claims may be added to an application which had originally only claims for a machine.

John R. Williams Co. v. Miller Co., 107 Fed. 290, 292.

Conversely, we submit, product claims may be properly added to an application which describes and claims a process which produces such product.

Harmatta's file wrapper discloses nothing but the usual struggle of an inventor to obtain a patent for his invention. Throughout he complied with all the requirements of the law and of the rules of the Patent Office.

CHAPTER III.

THE McBERTY PRIOR USE DEFENSE.

When a patent attains the commercial importance of the Harmatta patent, someone will almost always be found, as experience has shown, who, having perhaps dabbled in the general subject-matter in connection with which the invention was ultimately developed, pretends, and even makes himself think, that he made the invention long before the patentee. This was recognized and pointed out by the Supreme Court in the *Barbed Wire Patent* case, 143 U. S. 275, 284, where the court said that

“almost every important patent, from the cotton gin of Whitney to the one under consideration, has been attacked by the testimony of witnesses who imagine that they had made similar discoveries long before the patentee had claimed to have invented his device.”*

This is human nature. “The wish is father to the thought.” Such claims are sometimes entirely fraudulent, but are often set up by men who are more or less unconscious that there is no real basis for their contention. There being a strong motive to create such a defence, and human memory being frail, it is easy for a man, particularly if he was so situated that he *might* have made the invention, to persuade himself that he is really entitled to the credit of some one else’s great achievement; and corroborating witnesses can always be found who, under the stimulus of skilful suggestion, will subscribe to an essentially untrue structure of testimony.

The present case is no exception in this particular, for here we find as one of the chief defenses an alleged prior

*See also the *Telephone* and *Incandescent Lamp* cases referred to, page 188 *infra*.

use, claimed to have been carried on by one Fred B. McBerty in February, 1901, at Warren, Ohio.

It appears that McBerty, while in the employ of the Warren Electric & Specialty Company of Warren, Ohio, in February, 1901, was in charge of a butt welder machine which was in use for butt welding the ends of the guard rings of electric desk fans. These rings were the circular wires forming parts of the wire guard frame which enclosed the fan blades. The fan blades were secured by rivets to the arms of a center or "spider", the hub of which was fastened to the shaft of the electric motor. The defendant alleges that McBerty made some experiments with this butt welding machine in the course of which experiments he arrived at the idea of spot welding. It is even asserted (but as a belated emendation of the story), that by this spot welding process McBerty welded a "trayful" (about a dozen or fifteen) of fan blades and spiders which were assembled in completed fans and went into the regular commercial product of the Warren Company known as "Peerless" fans.

This McBerty prior use contention was not passed upon in the majority opinion of the Court of Appeals for the Sixth Circuit holding the Harmatta patent invalid for lack of invention. Judge Denison, in dissenting from the conclusion of the Court that the bill should be dismissed, must have found the defence to have failed.

The first and perhaps the most obvious answer to the McBerty story is that even if it were all true, it amounts only to an *abandoned experiment*, ineffective to defeat the Harmatta patent; for it is admitted that after the one alleged trayful of fan blades and spiders had been produced, the process was wholly abandoned by McBerty and the Warren Company, and that thereafter the company's fan blades were always *riveted to the spiders* as they had been before, the machine being continued in use only

for butt welding the guard rings, and no further spot welding experiments, or anything of the sort, ever having been performed on it. It is not asserted by McBerty that any of this alleged spot welding was done except between February 15, 1901, and the end of that month. McBerty never did any other spot welding on this or any other machine until many years later, long after the date of Harmatta's application. Nothing would ever have been heard about the 1901 McBerty experiments had it not been for the Harmatta patent and the necessity of building up a defense against it.

But the story *is not true*; in fact it is *demonstrably false*.

In the first place, the whole setting of the story and the history of its development are such as to make it improbable to the last degree. There are certain outstanding facts about it, requiring no detailed study of the record, and easy of comprehension, which in our opinion are of such controlling importance that this Court, on the basis of these facts alone, will reject the McBerty defense and find that the District Court was in error in sustaining it.

Briefly summarized, some of these salient outstanding facts are as follows:—

(1) The story first saw the light (in a very different form from its present form) in 1913, when McBerty, who was then an officer of a concern known as the National Electric Welder Company, which had been notified by the plaintiff, the Thomson Company, that it was infringing the Harmatta patent, worked up the defense in conjunction with his counsel, J. Nota McGill, and approached the Thomson Company with an offer to sell his "prior use" evidence to the Thomson Company, to be by that company suppressed, in consideration that his company should receive a license under the Harmatta patent on better terms than others were to receive,— a proposition which

was rejected by the Thomson Company with the contempt it deserved.

(2) The next appearance of the story was when McBerty, later on in the same year, 1913, communicated it to counsel for the defendant in the Barney & Berry case in the First Circuit. These counsel made a thorough investigation of it, collecting many affidavits with the aid of McBerty, who spent two weeks of his time helping them; and when the story was fully before them, these counsel decided that it would hurt and not help their case, for the reasons, first, that they did not believe it, and second, that even if it were true, all it amounted to was an abandoned experiment.

(3) After the decision of the Court of Appeals for the First Circuit sustaining the Harmatta patent in the Barney & Berry litigation, McBerty's company, the National Electric Welder Company, took a license under the Harmatta patent, in which license the validity of the patent was recognized,—conduct wholly inconsistent with McBerty's claims to prior invention.

(4) The story as now told by McBerty is a radical departure from the story told by him in 1913, to his own counsel and to counsel for the Barney & Berry Company, in many particulars. Two of the most significant are:

(a) The matter of the "trayful" of fan blades and spiders alleged to have been united by spot welding and to have gone into the commercial fans sold by the Warren Company was unthought of in 1913. In 1913 McBerty made no pretense that he had spot welded more than one spider to its blades and said definitely that no commercial use was made of the process. He did not even allege that this one fan blade structure was ever embodied in a finished fan. Now he says (evidently for the purpose of curing, if possible, the obvious defect of his previous story in that it showed nothing but an abandoned experiment), that all

the fan blades and spiders of about a dozen fans were spot welded by him, that the same were assembled into finished fans and that these went into the commercial output of the Warren Company.

(b) Although McBerty in 1913 told his own counsel that he was "unable to identify the exact date" when he "did this experimenting", he now comes forward with a *dated* alleged original sample of his work (Exhibit M) upon which is stamped the date "2/15/01", this having been deliberately fabricated, as we believe, for the purpose of supplying an element of proof previously lacking, namely, contemporaneous record evidence.

McBerty certainly never thought enough of his 1901 experiments to apply for a patent on the process he now claims that he then invented, although he has taken out many patents (Vol. I, p. 441).

His present company, the Federal Machine & Welder Company, is a manufacturer of machines to be used in infringement of the Harmatta patent (Vol. II, pp. 849, 850), so that he is strongly interested to defeat the patent.

These broad facts, all standing out on the face of the record, and requiring no detailed examination of the evidence, are enough, to say the least, to cause the Court to look with grave suspicion upon the story; and, coupled with the fact that it is admitted that the process was never carried any further than the welding of this one alleged "trayful of fans", a work which could not have occupied more than an hour or so, these facts are in our belief controlling, and require that the whole matter be dismissed as improbable and as at best an unsuccessful abandoned experiment.

But this is by no means all. When we come to analyze the story in detail, we shall find, as is usually the case in a situation of this kind, that when subjected to careful

analysis it breaks down *in details*. We shall, later, fully discuss these details and the inherent contradictions in the story as told.

But outside of these contradictions and the entire failure to make out a consistent story *there are at least three reasons why it is not possible that McBerty's story can be true, namely:—*

(a) That the butt welding machine on which McBerty alleges that he did this work did not have room to insert the fan blades and spiders which he says he spot welded on it;

(b) That the machine did not have a transformer capable of supplying enough current to it to do spot welding; and

(c) That McBerty did not have in 1901 the sheet steel spiders which he says that he then spot welded.

Moreover *the only concrete items of evidence* which defendant produces to support McBerty's present story utterly fail to do so:—

(d) The 1901 catalogue of the Warren Company, which is alleged to show a cut of a fan with spot welded blades, is proved by defendant's own witnesses to have been gotten out months before the machine was built on which McBerty asserts that he did his spot welding so that the cut could not have been made from a fan with such blades; and

(e) "Defendant's Exhibit M", the piece of a spot welded spider and fan blade stamped with the date "2/15/01" and with McBerty's name, is clearly spurious and fraudulent.

The demonstration of these points — each of them fatal to McBerty's contention — will require a great deal of patience on the part of the Court, as it involves a necessarily tedious analysis of the testimony.

We shall first direct the Court's attention to the broad outstanding facts in the situation which we have above suggested; we shall then ask the Court's patient consideration of the evidence which in our view positively proves that the McBerty story cannot be true; and we shall particularly discuss the misleading catalogue cut and the alleged specimens upon which McBerty relies, and consider the evidence of the "corroborating witnesses".

**McBERTY'S EFFORT TO SELL HIS EVIDENCE TO
THE THOMSON COMPANY.**

In December, 1912, when the Harmatta patent issued, McBerty was a half owner and the active manager of the National Electric Welder Company (Vol. II, p. 848), which company he had formed in 1911 to manufacture electric welding machines for both butt welding and spot welding. (The Harmatta process had been introduced in the United States in 1904 at the works of the National Enameling & Stamping Company, of Baltimore, Maryland, and prior to 1911 this company had built and put into use many spot welding machines (*supra*, p. 14), so that by this time spot welding was common knowledge and McBerty was entirely familiar with it.)

Upon the issuance of the Harmatta patent, notice of infringement was immediately served on McBerty's company, the National Electric Welder Company (Vol. II, p. 745).

Then McBerty, who had unquestionably set up in the plant of the Warren Company in 1901 a butt welding machine and very likely had done some unsuccessful experimenting of some sort on it, bethought himself of these abandoned experiments, and saw a chance, by distorting and enlarging upon them, of working up a case of alleged "prior use" which might enable him to make terms with the Thomson Electric Welding Company, plaintiff's prede-

cessor, owner of the Harmatta patent. He consulted his attorney, J. Nota McGill, got up some affidavits and *attempted to sell this evidence to the Thomson Company, to be by that company suppressed.*

McBerty's animus in the matter is shown by the very first letter which he wrote to his counsel, J. Nota McGill, December 9, 1912. McBerty said in that letter (Vol. II, p. 950):—

"I have been looking up my witnesses and etc., on this matter, and if we have any chance at all I am confident that we can either put up an extraordinary good fight or be in a position to ask the Thomson Company for a satisfactory settlement."

A "settlement" was what he was looking for.

Mr. McGill, replying to this suggestion as to a settlement with the Thomson Company on the basis of this evidence, said in his letter to McBerty under date of December 13, 1912 (Vol. II, p. 949):—

"In thinking over the Harmatta patent, it occurs to me that it might be to your interests not to enter into any alliance with other manufacturers having for its object the making of terms with the Thomson Company. If your evidence is as it now appears to be sufficient to invalidate the Harmatta patent, the Thomson people would doubtless be willing to negotiate with you on satisfactory terms, provided they were not compelled to similarly deal with your competitors. If there is any reason for giving the latter the benefit of the defense you have, then of course they will continue to be competitors. I suggest these things for your consideration."*

Mr. McGill, in a letter to McBerty's company dated

*This remark was made before Mr. McGill had made any investigation whatever of McBerty's claims.

January 4, 1913 (Vol. II, p. 943), after stating that he has written a letter to the Thomson people about the matter, goes on to say that "*the affidavits submitted are not wholly sufficient*, but I do not want to suggest any change until after I see the machine", and adds:—

"If the Thomson people will grant you a license you can afford to surrender your evidence."

Thereupon McBerty armed with affidavits from Brown and Lipps, whose later affidavits are in evidence (Vol. I, pp. 478, 450), called on Mr. Fish, of counsel for the Thomson Company, in the hope of arranging for some settlement on the lines suggested. Mr. Fish, after hearing McBerty's story, told him, as McBerty himself admits, that on his own statement the whole matter was only "*an abandoned experiment*" which was not sufficient to defeat the patent (Vol. II, p. 753).

McBerty's proposition was, as he himself testifies, that the Thomson Company should

"buy me out" (p. 753).

This proposition was of course declined by the Thomson Company.

Thus McBerty's effort to sell himself and his evidence to the Thomson Company failed. **He was willing "to surrender" his "evidence" upon condition that he himself should receive a consideration either in the form of a license under the patent on more favorable terms than other manufacturers, or in the form of an outright purchase price.**

McBerty's proposition was little short of blackmail and the suggestion that in the event of a trade the evidence should be surrendered,— that is that the defense should be suppressed,— would have been a gross fraud on the public, who were entitled to the defense, if it in fact existed.

McBerty's course in this matter reflects anything but credit upon his own honesty and credibility.

The reasons for McBerty's bitter enmity against the Thomson Company and for his determination to break the Harmatta patent by any means possible are thus made obvious.

Such an attempt to sell the proofs of an alleged prior use casts discredit on the veracity and good faith of the person who claims to have made that use, and gives good ground for rejecting the story.

In *Chadeloid Chemical Co. v. Thurston Co.*, 220 Fed. Rep. 685, before Judge Sanborn, in the District Court of the Northern District of Illinois, there was urged an alleged prior use based mainly on the testimony of men who had attempted to sell the evidence of priority to the patent owner with an offer to destroy the proofs. The court said:—

“The facts recited are so flagrant (to say the least) that no court would be justified in paying the slightest attention to this prior use evidence, since the testimony of Hulin and Matthes is vital.” (Page 693.)

COUNSEL FOR THE BARNEY & BERRY COMPANY THOROUGHLY INVESTIGATED THE McBERTY STORY, CONCLUDED THAT IT AMOUNTED TO NOTHING AND DECIDED NOT TO RELY ON IT IN THE BARNEY & BERRY CASE.

Balked in his efforts to sell himself and his evidence to the plaintiff, McBerty in 1913 put the whole story in the hands of Messrs. Edwards, Sager & Wooster, counsel for the Barney & Berry Company, which was then being sued in the First Circuit by the plaintiff on the Harmatta patent, and spent *two weeks of his time* assisting Mr. Howe of that firm to collect the evidence, taking him around to see all the witnesses and aiding in the drawing of numerous

affidavits (Howe, Vol. I, p. 300, Q. 7). In the course of this investigation Mr. Howe, with McBerty's help, collected affidavits from the following witnesses in addition to McBerty himself, namely:— Lipps, Browne, Gilder, Meeney, Estabrook, Bean, Wolcott, Bettiker, McCurdy, Lewis, Bechtel, Pendleton, Pilz, Wakefield, Ulp and Pfile, — all of which affidavits are in evidence and printed in Vol. I of the record, pp. 450-483.

This mass of testimony was carefully investigated not only by Mr. Howe, but also by Mr. C. V. Edwards, head of the firm of Edwards, Sager & Wooster and one of the most experienced and successful patent lawyers at the New York bar, Mr. Edwards himself also having a talk with McBerty personally; and these attorneys decided both that McBerty's story was not entitled to belief, and that if it were true it showed only an abandoned experiment which would not anticipate the patent (Vol. I, p. 292, Q. 12). Mr. Edwards testifies that it was decided not to rely on this "prior use" as a defense in the Barney & Berry case,

"First, because after reading the affidavits and after hearing Mr. McBerty's version, **neither I nor Mr. Sager nor Mr. Warren* believed the story.**

"Second, because it seems to me that even if all that Mr. McBerty said had happened, had actually happened, **it was nothing more than an accidental experiment**, and whatever its nature was, it was evidently considered by him to be useless for any practical purpose." (Vol. 1, p. 292.)

Naturally Mr. Edwards decided not to prejudice his

*Mr. Warren was the General Manager of the Toledo Electric Welding Company which was the manufacturer of the infringing spot welder used by the Barney & Berry Company, the defendant in the Massachusetts Case, the defense of which the Toledo Company assumed.

chances in the Barney & Berry case by relying upon any such defense. All this is brought out in Mr. Edwards' deposition in the present case (Vol. I, p. 288) taken by us in answer to the scandalous charges made on behalf of defendant to the effect that the evidence of the alleged McBerty prior use was wrongfully suppressed by Mr. Edwards and that the case was collusively tried.

FOLLOWING THE DECISION IN THE BARNEY & BERRY CASE, McBERTY'S COMPANY TOOK A LICENSE UNDER THE HARMATTA PATENT AND ADMITTED ITS VALIDITY.

After the final decision of the Court of Appeals for the First Circuit holding valid the Harmatta patent, the National Electric Welder Company, of which McBerty was active manager, took a license from the Thomson Company under the Harmatta and other patents.

These facts are brought out in the opinion of Judge Westenhaver in *Thomson Spot Welder Company v. National Electric Welder Company*, 260 Fed. Rep. 223, a suit on the license contract, who states as follows:—

“Complainant's patent, No. 1,046,066, issued to Johann Harmatta, has been adjudicated to be valid by the United States Circuit Court of Appeals of the First Circuit. This adjudication became final in July, 1916. *Thereafter complainant entered into a license agreement with the defendant, the National Electric Welder Company, granting it permission to use the Harmatta and other patents owned by complainant until the expiration of the Harmatta patent. This agreement, in addition to other terms, contains a clause whereby the National Electric Welder Company admits the validity of the Harmatta patent, and of all patents relating to spot or point welding machines now owned by complainant, and agreed not to ques-*

tion or contest, during the life of said Harmatta patent, the validity or terms thereof, or the application thereof to the process of spot or point welding machines utilized therefor. Substantially all other makers of machines for the utilization of this process, it is alleged, have entered into similar license agreements." . . .

"The conduct, in particular, of Fred P. McBerty, active manager of the National Electric Welder Company, shows a course of conduct directly inconsistent with a past purpose or with a sincere intention to observe in good faith that part of the agreement binding the National Electric Welder Company not to question or contest the validity of the Harmatta patent. His co-operation with other defendants over a long period, in procuring evidence, making experiments, and planning for an attack on the Harmatta patent, is not justified by the excuses put forward in his behalf, namely, that evidence of prior use in his possession may be forced from him by legal process."

The conduct of McBerty in taking a license for his company, the National Electric Welder Company, under the Harmatta patent, in which license the validity of the patent was recognized, is, we submit, *wholly inconsistent* with the claim he now makes that he himself originated the invention covered by this patent.

**McBERTY'S PRESENT STORY DEPARTS FROM AND
ENLARGES UPON HIS 1913 STORY NOTABLY IN
TWO ESSENTIAL PARTICULARS.**

As we have shown, in the year 1913 McBerty told his story at length to his own attorney, J. Nota McGill, and worked up affidavits for the purpose of "selling out" his evidence to the plaintiff, for suppression; and thereafter again, in the same year, he told it to Mr. Howe, of Edwards,

Sager & Wooster, attorneys for the Barney & Berry Company; and at that time personally assisted Mr. Howe in collecting affidavits and evidence in support of his story, besides himself giving a long and full affidavit to Mr. Howe.

It is very fortunate that we have now the full detail of the story as it was told by McBerty in 1913; for a comparison between the 1913 version and the present version, shows most radical discrepancies. The two stories are very different. In particular that told in the present record varies from that told in 1913 by the incorporation in it of at least two most significant and surprising additions, designed to overcome two fatal deficiencies in the 1913 version — the lack of any pretense of commercial use — and the lack of contemporaneous record evidence. There is no hint in the 1913 story of the alleged facts on which these additions are based. They appear for the first time in the testimony in this case.

McBERTY'S STORY OF 1913.

The subject was opened by McBerty in a letter to his attorney, Mr. McGill, dated December 9, 1912 (Vol. II, p. 950). In this letter he acknowledges receipt of a copy of the Harmatta patent, and adds:—

“In connection with this subject I am interested in knowing whether, *if* I manufactured a machine and did spot welding on it before the application was made in England or the United States in a satisfactory and practical manner, would this have bearing on the granting of the patent at the present date to the Thomson Company.

“I have been looking up my witnesses and etc. on this matter, and if we have any chance at all I am confident that we can either put up an extraordinary good fight or be in a position to ask the Thomson Company for a satisfactory settlement.”

Mr. McGill replied under date of December 10, 1912, to the effect that such machine would constitute an anticipation of Harmatta,—

“provided it was not an abandoned experiment. In other words if the machine was constructed and used in an experimental way and then abandoned it will not be available as a defense. If, on the other hand, it was long in use and was used where it could be seen by people connected with the establishment, it would constitute a good defense.” (Vol. II, p. 951.)

Thereupon, under date of January 2, 1912 (an obvious mistake for January 2, 1913), McBerty wrote another letter to McGill (Vol. II, p. 944) describing his efforts to get statements from witnesses, referring to the fact that the welding machine on which he did the spot welding was originally designed for a butt welder, pointing out that the transformer used with this machine was shown by the books to have been turned over on January 25, 1901, to the fan department of the Warren Company, and then making this significant statement:—

“I have also samples of spot welding which was done on the welder at the time we did this experimenting, and while we are unable to identify the exact date we can approximate it within two or three months.”

We call attention in passing that *this is a plain statement that he did not have at that time a dated specimen of his work such as he now pretends to produce as his Exhibit M.* If he had had Exhibit M when he wrote this letter he could not possibly have written it, because one of the very samples he was talking about would have borne upon its face the evidence to “identify the exact date”. He does not now assert that Exhibit M was only found by him after the

letter was written, but says that he had found it in his tool box in 1911 or 1912 (Vol. II, p. 840, X-Q. 784).

McBerty's next letter to McGill, February 10, 1913, explains that the Warren Company after "this experimenting", abandoned the idea of uniting the fan blades and centre spiders by welding because the dies which they then had to stamp out the blades also punched the rivet holes required for the rivets by which they united the blades to the spiders, and if spot welding were to be employed no such rivet holes should be punched on account of their unsightly appearance. It would therefore have been necessary to go to the expense of getting new dies which would stamp out blades without punching rivet holes (Vol. II, p. 947).

McBerty's next step was to try to induce the Thomson Company to buy out his evidence for the purpose of suppressing it, as above pointed out, and when this attempt failed he was in a good mood to put up the "extraordinary good fight" mentioned in his letter to McGill of December 9, 1912 (Vol. II, p. 950).

His opportunity came in the Barney & Berry suit when counsel for the Toledo Electric Welder Company, which was defending that suit, sought to make the defense of the McBerty prior use. Mr. McGill first turned over all the data in his possession to Mr. Edwards, of counsel for the Toledo people, in September, 1913 (McBerty, Vol. II, p. 762, Q. 280); and later McBerty assisted Mr. Howe in a full and careful investigation which was completed in October, 1913 (Vol. I, p. 300).

The detailed McBerty affidavit prepared at that time (Vol. I, p. 437), 1913, should be carefully read in order that the Court may have well in mind *the maximum extent of the assertions made by McBerty in 1913*. This affidavit occupies eleven printed pages and was sworn to on October 9, 1913. It must not be forgotten that even this affidavit was made twelve years after the alleged date of the ex-

periments which it purports to describe. There is no reason why even then McBerty and his other witnesses should have more than the vaguest recollection of what had happened so many years before; but certainly their recollection in 1913 is as good as their recollection when they testified in this case six years later.

McBerty, in the 1913 affidavit, says that he desired to produce a cheaper fan for the season of 1901, and that he decided to make parts of this cheaper fan of iron instead of brass, and to unite the ends of the guard rings by butt welding, and describes the building and use of his butt welding machine. As to spot welding, he says (p. 440):—

“I demonstrated to my own satisfaction and also that of others that the machine would butt weld satisfactorily, . . . and also that sheets or plates of metal could be welded together in spots less in area than the overlapping portions of the plates.”

He then explains how this was done, and proceeds to describe (p. 441) the spot welding which he says he did. This is what he says (p. 442):—

“In demonstrating the practicability of this idea **I took one of the steel fan blades and centers** and welded the blades to the center arm, each blade being secured to the arm by a number of welds in different spots. This was done by me in the spring of 1901, this being the time the machine was finished and its capability of butt welding the ends of the fan guard rings demonstrated.”

This is *absolutely all* that McBerty, in this carefully prepared affidavit of 1913, claimed to have done by way of spot welding. He asserts only that in *one case* he welded the four fan blades to the centre or spider, and *he does not even assert that in this one case was this welded structure*

put into a complete fan, with motor, guard, etc. Indeed, in the portion of the affidavit immediately following that above quoted, he seems to say that this one welded structure was cut up by him and one blade of it (produced and marked Exhibit O attached to his affidavit) kept as a specimen of the work, the rest apparently being thrown away. **There is not the least hint that he used the spot welding process to unite fan blades and spiders of a dozen or fifteen fans, and that these went into the regular commercial output of the Warren Company and were sold, or even that he spot welded one spider to its blades, which went into a fan that was sold.**

The rest of the affidavit consists mainly of an explanation of the manner of operating the welding machine and of an explanation of the reasons why spot welding was not used in the commercial manufacture of the fans.

Those reasons were that the fan blades and spiders already in stock had been punched for rivets, and it would make a botched job to have open rivet holes in blades united to the spiders by spot welding,* that as the punching had been done there would be no saving in spot welding over riveting, that further expenditure would be necessary to make the tools and jigs necessary to perform the spot welding, that as it was in the month of February, which was well along in the fan season, it would be impracticable to make a change for that season, that the riveted fans

*A significant circumstance in this connection is that while McBerty in this affidavit of 1913, asserted that a principal reason why the spot welding of blades to spiders was not adopted was because the fan blades were already punched with rivet holes (see also McBerty's letter to McGill, February 10, 1913, Vol. II, p. 947; Lipps' affidavit, Vol. I, p. 454; Brown's affidavit, Vol. I, p. 484), such punching is flatly denied by McBerty in his testimony in this case (Vol. II, p. 740) because he wishes to contend that he spot welded blades to spiders that were put on fans that were sold. Fans with blades having unfilled rivet holes would have been unsalable.

had proved satisfactory, and that they did not want a second set of apparatus or a duplicate set of unpunched stock, as would be necessary for the spot welded fans (Vol. I, p. 443).

None of these reasons would have prevented the spot welding of fan blades for the succeeding season of 1902 or subsequent seasons. The admitted fact that no attempt was made to do such spot welding in 1902 or later is a strong indication that *the real reason* for its non-user was that McBerty had never in fact practiced that process in 1901, or that if he had tried experiments pointing in that direction he had accomplished nothing and abandoned the idea as a failure.

The principal other persons whose affidavits were obtained in 1913 by Mr. Howe were E. C. Lipps (Vol. I, p. 450) and Frank G. Brown (p. 478), each of whom executed an affidavit on October 6, 1913.

The affidavit of Lipps may be summarized: That in the year 1901 he was employed until *April 29* at Cleveland when he returned to Warren and entered the employ of the Trumbull Mfg. Company (this date being fixed by his time book), that while in the employ of the Trumbull Company he frequently visited McBerty and that on one of his visits he found McBerty "putting in a transformer of larger capacity" in the welding machine, that spot welding as well as butt welding was performed on the machine and he produces "Exhibit H" attached to his affidavit "as a kind of a sample" of the welding done, that he saw steel fan blades welded to the hub arms in a number of distinct spots, that McBerty told him that "he proposed the use of the spot welding of the fan blades to the centers in producing a commercial cheap grade of fans," that the fan blades were "drilled" with rivet holes, that the spot welding of the fan blades to the centers as proposed by Mr. McBerty "was not adopted commercially," that

"at that time the space between the clamp arms" of the machine "was not sufficiently deep to permit the sheets to be welded together to extend sufficiently low down when placed between the electrodes" so that "we bent the ends of these electrodes upwardly so as to allow the sheets of metal to enter between the sheets of the electrodes at a sufficient extent to place the weld at a spot desired", that "in the original machine" the two pieces of the base plate "were separated by a piece of fibre to insulate them which extended the whole length of the base plate", and that later the "fibre piece was cut out directly under the spot where the weld was made".

Many of these statements absolutely contradict McBerty in the essential features of his testimony in the present case as we shall show.

Brown's affidavit, Vol. I, p. 478, is to the effect that he was in the employ of the Packard Motor Car Company of Warren in 1901, that one Sunday "previous to May 6, 1901," he visited McBerty who told him that he had done spot welding on his machine, that he saw no spot welding done, that he produces a fan blade spot welded to an arm cut from a fan center or spider marked "Exhibit B" as a specimen "precisely the same" as those shown him by McBerty. He confirms McBerty's statement that the fan blades at that time were "punched for rivets in accordance with the practice of the Company, which had always employed rivets for this purpose," and that the securing of the fan blades by spot welding was not adopted by the Warren Company.

There is no hint in the affidavits of Lipps and Brown (or in the affidavits of others), all of which were prepared under McBerty's supervision, of anything but a futile and abandoned experiment, which, if Lipp's Exhibit H is a true specimen, never amounted to spot welding in any sense, as we shall show (*infra*, p. 177).

The other affidavits (pp. 463-477) add nothing whatever of consequence to McBerty's own story.

None of the 1913 affidavits, including that of McBerty himself, suggest or hint that any spiders having welded blades went into complete fans that were sold, or indeed that any one such complete spot welded spider and blade structure ever was made as a commercial product.

Mr. Howe, who obtained the affidavits as the basis of making a defense of prior use in the Barney & Berry case, was, of course, very eager to get evidence that spot welding had been practically used by McBerty and that what he had done was not a mere abandoned experiment, but he was definitely told by McBerty that there had been no commercial use of the process. Mr. Howe testifies (Vol. I, p. 302, Q. 11):—

“He (McBerty) said that they had made one fan, one complete structure — by a complete structure I mean the central part which has been referred to as spider, with a blade secured to each of the arms of the spider. In this connection I was very insistent to learn if more of these fan blade structures had not been made, and especially I was desirous of establishing that there had been some commercial use made of these fan structures, because I believe this would have made our case of prior use immeasurably stronger; but *I was unable to find out by McBerty or any one that there had been a commercial use of them, in fact **was told there was no commercial use***; the reason was that Mr. Gillmer [the president of the Warren Company] had decided not to put them into commercial use because of financial considerations, and that ended the matter.”

In fact, as Mr. Howe testifies, McBerty did not even assert that “a complete fan structure, that is, including the

motor, fan, guard, etc., and including spot welded blades, had been built" at that or any other time (Howe, Q. 12, p. 303).

McBerty likewise told Mr. Edwards that no spot welded fan blade "had been sold or put into use and that none had been welded except upon the one occasion referred to" (Edwards, Vol. I, p. 292, Q. 11).

In answer to this clear and definite testimony of both Mr. Howe and Mr. Edwards, McBerty has only two mutually contradictory statements to offer.

He said in his first deposition that *he did not recollect whether or not he told Mr. Howe about the fans going into commercial use*. We quote his testimony (Vol. II, p. 865):

"X-Q. 1140. Did you tell Mr. Howe of any assembled fans with these spot welded spiders and blades?

A. I don't definitely recollect that, either.

X-Q. 1141. Did Mr. Howe ask you about that?

A. That I couldn't say.

X-Q. 1142. Don't you recall that it interested Mr. Howe to know whether these spot welded spiders and fans had gone into commercial use?

A. It would, yes, sir.

X-Q. 1143. *But you don't recollect telling him?*

A. No.

X-Q. 1144. *That was a point you either held back or didn't know about?*

A. *I didn't know about definitely."*

Later on, apparently realizing the fatal character of this admission that he in 1913 did not know definitely whether any spot welded fans went into commercial use, and that he did not recall telling Mr. Howe about the matter, he recants from this position in a second deposition and testifies (Vol. II, p. 960, Q. 6) that he *did* tell Mr. Howe

about these spot welded complete fans which went out to the trade in 1913.

It is perfectly clear that the testimony of such a witness is not to be accepted against the word of these two highly reputable lawyers, Mr. Edwards and Mr. Howe; and indeed it goes without saying that anything and everything which McBerty had told Mr. Howe about any commercial use, would certainly have been incorporated in the affidavit by Mr. Howe, who was intensely interested in showing commercial use if possible.

Mr. Howe also recognized the extreme importance of getting *contemporaneous record evidence* of the date when the work was done. He says (Vol. I, p. 302):—

“I was somewhat concerned in the case because almost everything seemed to depend upon recollection of the persons who knew anything about the matter, and I was therefore especially urgent to get some documentary evidence or contemporaneously dated articles of some kind which would corroborate the recollection of the witnesses. Such material seemed very scarce, and *I again and again urged it upon Mr. McBerty that it would be of very great assistance if some such contemporaneous material could be obtained.* We scanned the situation again and again, and apparently Mr. McBerty did everything that was possible for him to do to produce all the tangible date evidence that he could.”

No such date evidence was produced.

On the McBerty story as told in 1913, first to his attorney, McGill, and later as set forth to its fullest extent both in McBerty's own affidavit and in the affidavits of others prepared with his assistance, absolutely no argument can be made of an effective prior use. The situation lacked two absolutely vital essentials

of a successful prior use defense, namely: *first*, the element of commercial use as distinguished from abandoned experiment, and, *second*, contemporaneous record date evidence.

It was after all this evidence had been collected and considered that McBerty took a license for his company, the National Electric Welder Company, in which the validity of the Harmatta patent was admitted (*supra*, p. 133).

Then, in 1917, the so-called "Welding Patents Investigating Committee", an association of manufacturers and users of unlicensed spot welding machines, was organized to fight the Harmatta patent, and this aggregation got in touch with McBerty, and through him has presented in this case a reconstruction of his old discredited story, the futility of which McBerty had himself practically admitted by taking a license under the Harmatta patent.

McBERTY'S PRESENT STORY.

McBerty's story had been rejected by Mr. Edwards first, as incredible and as obviously an abandoned experiment. The fact that it showed no commercial use of spot welded fans was a most important circumstance in fixing its experimental character. There was no contemporaneous evidence as to the date of the experiments. Mr. Howe had "again and again urged it upon" him that it would be of very great assistance if some commercial use could be established and some "contemporaneously dated articles" could be found (*supra*, p. 144).

These points were not lost upon so resourceful a man as Mr. McBerty; and so when he took the stand in this case six years later he was prepared to meet *both* difficulties.

First. McBerty now asserts that a trayful (some twelve or fifteen) of spot welded blades and spiders were put together by him and went into completed fans as part of the regular commercial output of the factory. This *new*

addition to the story is put in for the obvious purpose of attempting to overcome the fatal objection to the whole defense that at best it amounted to nothing but an abandoned experiment.

Second. McBerty now produces his "Exhibit M", a fan blade spot welded to a portion of a spider and bearing stamped on its face the date "2-15-01" and the name "F. McBerty". This is produced in order to supply the necessity for contemporaneous record date evidence, hitherto lacking. This Exhibit M, McBerty says, he dug up from his tool box in 1911 or 1912 (X-Q. 784, Vol. II, p. 840). But in his letter to his own attorney, McGill, of January 2, 1913 (the letter is dated by mistake January 2, 1912, but the context shows that it was really January 2, 1913), McBerty said:—

"I have also samples of spot welding which was done on the welder at the time we did this experimenting, and while **we are unable to identify the exact date** we can approximate it within two or three months." (Vol. II, p. 945.)

This is utterly inconsistent with the existence at that time of the dated Exhibit M which McBerty says he had found a year or two before. This sort of thing was exactly what Mr. Howe was looking for; and McBerty's only explanation of why Howe did not see it is that he (McBerty) deliberately suppressed it (X-Q. 823, Vol. II, p. 842), — an explanation which is, we submit, obviously not entitled to belief.

If all that McBerty now says were true, the defense of prior use would still fail, because his alleged operations, even so, did not amount to more than an abandoned experiment. His alleged work on the fan blades and spiders was done in less than a week (X-Q. 445, Vol. II, p. 821) and could have been done in an hour or so if done

at ordinary speed (X-Q. 459). The fact, if it be a fact, that in the course of that experiment a trayful of fan blades and spiders were spot welded and were put into fans as part of the commercial output of the factory is very far from being a practical commercial use of the process. This we shall discuss more fully in a subsequent section (p. 206).

But McBerty's story, emphatically, is *not* true

**THE EVIDENCE PROVES POSITIVELY THAT McBERTY'S
STORY CANNOT BE TRUE.**

We have now set forth certain broad and, as we believe, controlling facts about the McBerty defense which are easily stated and require no particular study of the record. We have shown that the story was first developed in 1913 — about twelve years after the alleged work was done — as a means for inducing the Thomson Company to give McBerty's company a license under the Harmatta patent on more favorable terms than others were to receive; that McBerty first attempted to sell his "evidence" to the Thomson Company for suppression, for the consideration that his company should be given such a license under the Harmatta patent, or for an outright purchase price, which proposition was rejected by the Thomson Company; that thereupon McBerty told the story to counsel for the Barney & Berry Company, and that these counsel made a very thorough investigation of it with McBerty's assistance, and concluded that it was not true, and that if true it amounted only to an abandoned experiment; that following the decision sustaining the Harmatta patent in the Barney & Berry case, McBerty for his company took a license under the Harmatta patent, admitting its validity; and, finally, that the story he now tells differs from and enlarges upon the 1913 story as told to his own counsel and to counsel for the Barney & Berry Company in the

two vital points, namely, the "trayful of fans" and the dated Exhibit M, without which additions no argument could possibly be made for an effective prior use. We believe that these broad facts, coupled with the admitted abandonment of the process after the making of the single alleged trayful of fans, point unerringly to the conclusion that the McBerty operations, whatever they were, amounted only to an unsuccessful abandoned experiment, insufficient to anticipate the Harmatta patent in suit.

At the outset of this discussion we stated that a story of this kind, unless it is true, usually breaks down when its details are carefully analyzed and patiently tested, and that in the present case it is definitely proved by certain demonstrated facts that McBerty's story is not and cannot be true. We now proceed to state these facts,—a process which will inevitably require a detailed consideration of the evidence. Later we shall show other fatal inconsistencies in the details of the testimony which we believe refutes itself. The two propositions of a broader character which we now advance are these:—

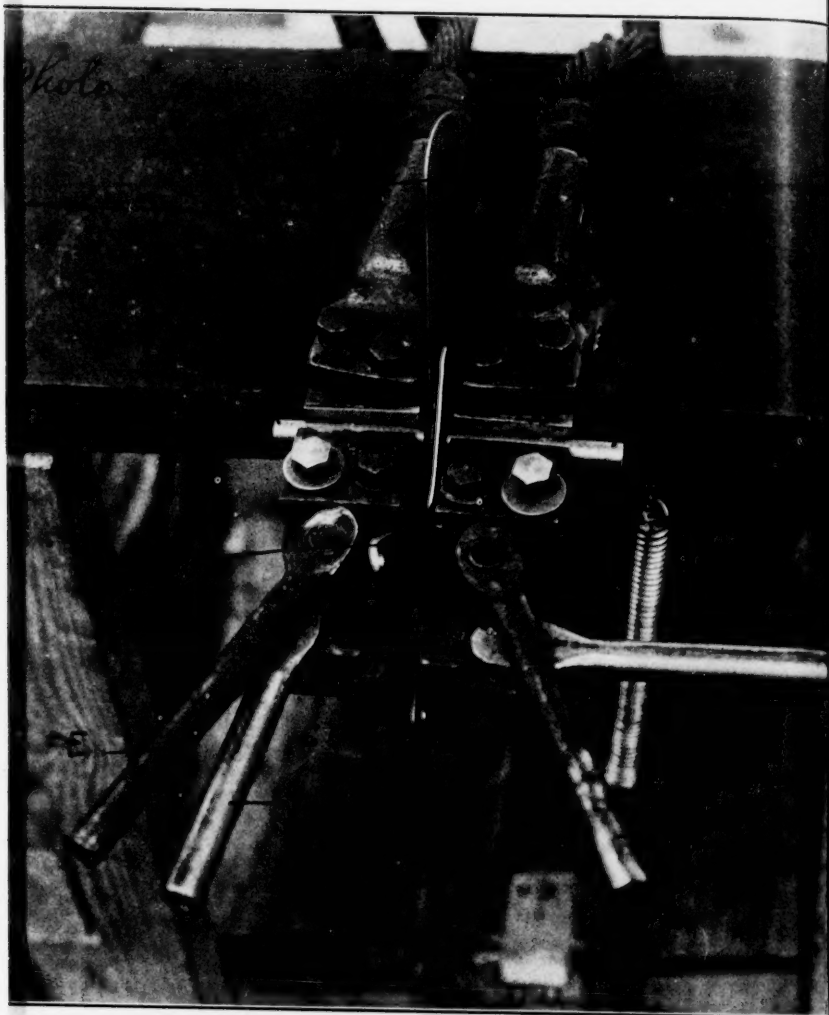
(1) That the butt welding machine on which McBerty claims to have done his spot welding in 1901 was incapable of doing the work he claims to have done on it, for two reasons: (a) because there was no room in the machine for the insertion of a fan spider with or without four blades attached to it, such as McBerty says he spot welded on the machine; and (b) because the transformer with which that machine was equipped in 1901 was incapable of delivering a current sufficient to do spot welding, although adequate for the butt welding for which it was designed.

(2) That in 1901 there were no such sheet steel spiders available to McBerty as he says he welded to the fan blades.

We now proceed to consider these propositions in order.



DEFENDANT'S EXHIBIT B.



THE SPACE LIMITATIONS ON McBERTY'S 1901 MACHINE WERE SUCH AS TO MAKE IT IMPOSSIBLE TO SPOT WELD FAN BLADES TO FAN CENTRES ON THAT MACHINE.

There is in evidence as Defendant's Exhibit B a machine alleged to embody certain physical parts of McBerty's 1901 butt welder, on which he claims to have done his spot welding, but this exhibit is admittedly only a recent reconstruction and differs from the 1901 machine in at least two vital respects—in its assemblage and manner of mounting on the bench and in the transformer used with it.

We show on the opposite page a photograph of this machine *as it is now set up*. It is composed of two movable platens marked respectively A and B, each mounted pivotally upon an angle iron (lettered respectively C and D) and each supplied with current from the opposite poles of a transformer, not shown in the photograph. G, G are copper electrodes held tightly by sliding clamp jaws operated by the cam handles E, E and fastened in position by nuts. In the photograph the fan spider or centre is shown at H, and a fan blade to be welded to the spider at I. F, F are cam levers or handles pivoted respectively on the two angle bars which bear respectively against the platens A and B. When these handles are moved, they operate to force the platens A and B toward each other and therefore to press the electrodes G, G carried by these platens A and B into close contact with the work to be welded. When the current is turned on, a welding heat is generated in the work between the electrodes and when these electrodes are forced together by means of the handles F, F the weld is completed.

The only parts of this device Exhibit B claimed to have been present in the 1901 machine are the two angle irons constituting base plates on which the movable platens are

pivoted, perhaps the swinging platens themselves and one pair of handles. The insulation between the plates is new (McBerty, Vol. II, p. 817, X-Q. 379). The spot welding electrodes are new (Vol. II, p. 501, Q. 98, 99; p. 818, X-Q. 384-388). The jaws of the clamps are new (Vol. II, p. 817, X-Q. 380, 381). At least one pair of handles is new (Vol. II, p. 817, X-Q. 378). The arrangement of the device on the bench (a vital matter to the operation of welding four blades to a spider as we shall now show) is new. The transformer which supplies the welding current is not the same as it was originally (*infra*, p. 163).

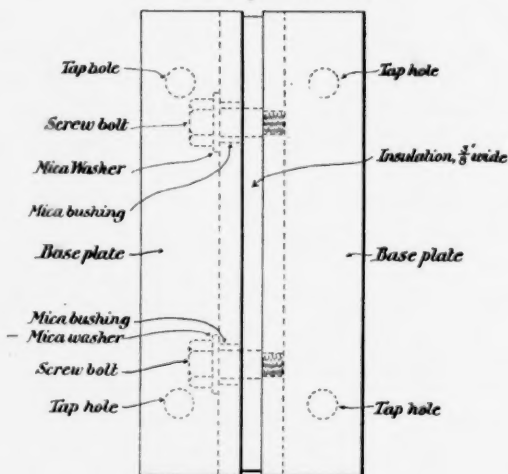
In 1911 what was left of the old machine was found by McBerty in the scrap pile in the garret of the Peerless Company (successor to the Warren Company) where it had been for years. It was then bought by McBerty and by him reconstructed and remounted in its present form in 1917 (McBerty, Vol. II, p. 832, X-Q. 645; p. 838, X-Q. 748-750; p. 834, X-Q. 688; p. 855, X-Q. 951).

It will be seen that, as this machine is now set up, the greater part of it projects forwardly in front of the bench and that there is an open space between the base plates, providing ample room for the insertion of a fan spider and fan blades between the electrodes. But, as is completely established by the evidence to which we shall shortly refer, when the machine was first set up in 1901, the space between the base plates, for their full length from rear end to front end, was filled in by an insulation plate of fibre, and the machine was mounted with its front edge flush with the front edge of the bench so that no parts projected forwardly of the bench except the handles. We insert two sketches showing the details of the base plates and bolts with this insulation plate in place.

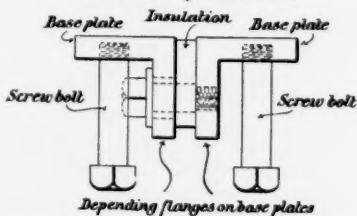
It will be obvious that when the device was set up in this manner there was no room for inserting a fan spider

between the electrodes, much less for inserting a fan spider with attached fan blades. The fact that the original 1901 mounting of this machine was as we have described it is stated by many witnesses, and it is substantially admitted by McBerty himself, who, although he says that his "notion" is that the parts projected forwardly from the bench then substantially as they do now, will not state so

Plan View of Base Plates



End View of Base Plates



Base Plates of Exhibit B as Originally Set Up.

positively (Vol. II, p. 835, X-Q. 706-710) (if he did he would be contradicted by more than half a dozen witnesses including several called by defendant). McBerty definitely admits that as the machine was originally set up in 1901, there was this insulation plate between the two parts of the device, and that because of the presence of this insulation plate there was no room for inserting a fan spider.

• He says (Vol. II, p. 819, X-Q. 405):—

“There was an insulation in the center of the machine which prevented us getting our work down at the proper height.”

“X-Q. 409. And you used that [a bent electrode] because there was an insulation piece running the whole length between the bottom plates?

A. Running the whole length, and I could not get my blade in low enough to reach it.”

It is therefore definitely admitted even by McBerty himself that when the device was originally installed in 1901 its space limitations were such that it could not do the work of spot welding fan spiders to fan blades, which McBerty claims to have done on it, because there was no room into which to get the spider and four blades, and that in this respect at least Exhibit B in evidence departs from the original construction.

McBerty further says that because of this space limitation he substituted for the straight electrodes, such as are present in Exhibit B, *Z-shaped electrodes* so as to raise the points of contact between the electrodes high enough above the strip of insulation to accommodate the pieces to be welded. He says in his affidavit of 1913 (Vol. I, p. 446):—

“I distinctly remember that at that time [*i. e.*, the early part of 1901] the space between the clamp arms 3 and 4 was not sufficiently deep to permit the sheets to be welded together to extend sufficiently low down

when placed between the electrodes 31 and 32, when these electrodes were straight, and so we bent the ends of these electrodes upwardly so as to allow the sheets of metal to enter between the electrodes to a sufficient extent to place the weld at the spot desired."

These bent electrodes he describes as Z-shaped and he says that it was with these Z-shaped electrodes that he made his first effort "to weld fan blades to the center" (Vol. II, p. 819, X-Qs. 402-408). He admits, however, that the Z-shaped electrodes would not do the work because "we could not supply sufficient power with these Z-shaped electrodes" (X-Q. 403). Obviously they would too flexible. He says that the only kind of electrodes which he used successfully for spot welding were the straight electrodes such as are present in Exhibit B (X-Q. 391) and that in welding his fan blades he used these straight electrodes (X-Q. 403).

It is obvious, then, that until a further change had been made in the manner of mounting the machine after his admittedly unsuccessful experiments with the Z-shaped electrodes, it was impossible for McBerty to have done the work that he now claims to have done on this machine.

McBerty says that he did away with this space limitation and got the necessary room by cutting away the forward part of the insulating piece between the base plates. This would of course not have given him room for inserting the spider with its four arms unless he had also moved the whole device forward on the bench so that it projected beyond the edge of the bench as it does in Exhibit B.

A flat and vital issue of fact is thus raised: *Did McBerty cut away this insulating piece and change the mounting of the device so as to make it project forwardly from the bench, and if so, when did he do it?* In this connection it should

be borne in mind that his allegation is that he did this spot welding work on the fan blades and spiders in *February, 1901*. He makes no assertion that he ever did any of it after that month (X-Qs. 613, 617, 620, Vol. II, pp. 830, 831; see also Smith, X-Qs. 337, 338, Vol. I, p. 520) and his dated Exhibit M purports to have been produced on February 15, 1901.

It is vital, then, to McBerty's story that it be proved that he had cut away this insulation piece and mounted the machine so that it projected forward from the bench *at least as early as February, 1901*. So he testifies (p. 820):—

"X-Q. 418. Now, what time of the year did you cut away that fibre?

A. That fibre was cut away when we first welded our blades.

X-Q. 419. What time of the year was that?

A. That was in the early spring.

X-Q. 420. What do you mean by early spring?

A. In either January or February." . . .

"X-Q. 423. And you made these fan blades early in January?

A. Either early in January or the first of February, that is, the first part of February."

"X-Q. 425. How do you identify February as the month?

A. I identify February as the month on account of my first piece of work being produced, which was produced in February.

X-Q. 426. What is that, Exhibit M?

A. I don't remember the number of the exhibit.

X-Q. 427. That has stamped on it February 15, 1901, I believe?

A. Yes, sir."

But on this vital point McBerty is not only refuted by a large number of wholly unprejudiced witnesses called by the plaintiff, but also by the testimony of defendant's own witness Lipps.

Taking first the testimony of Lipps, we find that Lipps was in Cleveland and not in Warren at all, as shown by the time book produced by him, Exhibit G, until *April 29, 1901*, and that until after that date he never could have seen this McBerty machine, so that anything he testifies to about the machine must have related to dates subsequent to April 29, 1901. (See Lipps' affidavit, Vol. I, p. 451; and Lipps' testimony, Vol. II, p. 919, X-Q. 54.) Lipps testifies that when he first saw the machine (which was as we have seen *after* April 29, 1901) the insulating fibre between the two base plates *ran the whole length between them*.

We quote his testimony (Vol. II, p. 923):—

"X-Q. 80. Do you recall in the original machine the fibre between the two base plates ran the whole length?

A. Yes sir, that is why we could not get a sheet in between."

And he testified about the use of the bent or Z-shaped electrodes. He says:—

"I distinctly remember that at that time the space between the clamp arms 3 and 4 was not sufficiently deep to permit the sheets to be welded together to extend sufficiently low down when placed between the electrodes 31 and 32 when these electrodes were straight, and so we bent the ends of these electrodes upwardly so as to allow the sheets of metal to enter between the electrodes to a sufficient extent to place

the weld at the spot desired."* (Vol. II, p. 922, X-Q. 74.)

And he further distinctly testifies, thereby rebutting McBerty's contention on the point, that the machine *did not protrude beyond the front edge of the bench*. We quote (p. 923):—

"X-Q. 76. Did it (the machine) stick out as far as it does now?

A. It had been altered repeatedly. When first made it set down.

X-Q. 77. Covered the whole bench?

A. Yes, sir.

X-Q. 78. Didn't stick out at all?

A. *It didn't stick out at all at first.*"

He testified that it was *at some later time* that the machine was moved out to project beyond the bench (X-Q. 79).

This testimony of Lipps is, by itself alone, we submit,

*Note that this testimony of Lipps speaks of the welding of "*sheets of metal*", not of fan blades. Lipps admitted on the stand that he never saw any fan blades welded on the machine (Vol. II, p. 917, Q. 17) although he had asserted the contrary in his affidavit (Vol. I, p. 453). Exhibit H produced by Lipps in connection with his affidavit as a sample of the work that was done on the machine, is composed not of a fan blade and centre, but of *two portions of armature lamination discs* (Vol. II, p. 453). This Exhibit H, which was kept by Lipps as "a sample" of McBerty's work, Vol I, p. 453, is a mere "*stick*" and not a spot weld at all (Gravell, Vol. I, p. 323; Wagner, Vol. I, p. 345). It is exactly the kind of thing which might be expected to result from an attempt to weld with a current of only one volt, which was the maximum welding current that the 1901 transformer was capable of supplying (*infra*, p. 163). A "*stick*" is the result of a mere fusing of the oxides on the surfaces of the metal pieces, and is to be sharply distinguished from a real spot weld, in which the body of the metal itself fuses and merges (Vol. I, p. 369). Defendant makes no assertion that Exhibit H is a specimen of successful spot welding, and did not offer it in evidence. It is exactly the sort of unsuccessful experimentation which McBerty may have done in 1901 on this machine if he did anything.

sufficient to overthrow the whole McBerty story, for it definitely proves that (whereas it is vital to McBerty's story, as we have shown, to prove that the insulation fibre had been cut away and the machine mounted so as to project beyond the bench as early as February, 1901) this defendant's witness, who could not possibly have seen the machine until after April 29, 1901, distinctly remembers that when he first saw it the insulation fibre had not been cut away, that the machine did not project beyond the bench and that in the experiments which he saw, it was necessary to use the impractical expedient of the Z-shaped electrodes in order to get any pieces of metal into the machine.

But this is not all. McBerty *never* cut away the insulation fibre or mounted the machine so that it projected forward of the bench (both of which steps were necessary to make room for his doing the work on the fans which he says he did) at least until long after 1901, if the testimony of at least five unbiased witnesses familiar with the machine is to be believed.

L. C. Brewer, called by plaintiff, is the chief witness on this point. His deposition is to be found at Vol. I, pp. 269-284. He was the first and only regular operator on this machine, and he worked on it for about four years, doing butt welding on the fan guards for the Warren Company (p. 270, Qs. 13-18). He therefore, if anyone, ought to know whether or not this machine was mounted as McBerty says, with the forward end projecting beyond the bench as in Exhibit B, and whether there was any slot in the insulation or in the bench to provide room for welding fan centres to fan blades. He definitely testifies that the machine was mounted on a solid fibre plate, that there was no slot in it while he worked on the machine, and that *no part of the machine except the handles projected beyond the bench*. We quote his testimony (Vol. I, p. 272):

"Q. 24. You have referred to a piece of fibre under the clamps. How big was the fibre in its area?

A. About 8 x 10, as I remember it.

Q. 25. Were there any slits in this piece of fibre?

A. Not while I worked on this machine."

"Q. 27. Did the clamps extend beyond the edge of the bench?

A. Yes, the length of the handles. Did you mean the clamps that clamp the ring?

Q. 28. Yes.

A. They did not. Not to my knowledge.

Q. 29. To make this matter exactly clear, what parts of the device did extend beyond the edge of the bench?

A. The handles of the machine.

Q. 30. Do you recall the work of putting this electric welding device on your bench?

A. Yes, sir.

Q. 31. State whether or not the bench was cut with a slit for this machine.

A. It was not."

Brewer made a sketch of the machine as it was when he worked upon it which is in evidence as Plaintiff's Exhibit 32 (Vol. I, p. 462), which shows no part of the machine projecting beyond the bench except the handles and no slot in the bench between the two halves of the machine.

Brewer knows of no spot welding being done on this machine, and knows of no other method of fastening the blades on the fan spiders by the Warren Company than riveting (p. 274, Qs. 51, 52).

C. R. Brewer, called by plaintiff, was employed by the Warren Company in the fan department during the years 1901, 1902 and 1903 and saw the machine every day (Vol. I, p. 285, Qs. 14-16). He likewise testifies that the

machine as then used was mounted upon an insulated fibre plate (Q. 17, Vol. I, p. 285), that the bench and fibre plate were not slotted (Q. 18), and that the machine did not protrude beyond the bench (Q. 20, p. 286). *He never knew fan blades to be attached otherwise than by riveting and never knew of any spot welding being done on this machine* (Q. 24, p. 286; Qs. 30, 31, p. 287).

C. G. Wolfe, called by plaintiff, aided McBerty in building this machine (Qs. 8, 9, Vol. I, pp. 309, 310), and worked at the Warren Company's factory until 1902 (Qs. 5, 6). He testifies to the same effect, namely, that the machine was set on fibre "flush or nearly flush with the bench" (Qs. 13, 14, p. 310). *He knows of no spot welding having been done on the machine* (Q. 18, p. 311).

L. L. Little, called by plaintiff, was one of the men who made the mechanical parts of the machine (Q. 10, Vol. I, p. 311). He testifies to the same effect, to wit, that there was no slot cut in the bench (Q. 15), and that "there was no space to put anything there at all, unless it was a very narrow piece" (Q. 16). All fan blades were riveted to the spiders (Q. 23, p. 312), and *Little never heard of any other welding being done on it except butt welding* (Qs. 17, 18, p. 312).

G. I. Spade, called by plaintiff, at the period in question was in charge of the motor assembling department for the Warren Company (Qs. 12, 13, Vol. I, p. 314) and frequently saw the machine in operation (Qs. 15, 16, p. 282). He testifies to the same effect as the other witnesses, to wit, that the machine as he knew it was mounted upon a fibre plate (Q. 18), and that it was not possible to insert blades or steel pieces between the welding electrodes "unless it would have been a very narrow piece, say about one-half inch" deep (Qs. 20, 21, p. 315). He testifies that the photograph of the present machine shows the machine projecting too far from the bench to represent

correctly the original mounting (Q. 18). *He never heard of any spot welding being done on the machine (Qs. 24, 25, p. 315).*

These witnesses do not remember that the base plates were angle irons (L. C. Brewer, Q. 41, C. R. Brewer, Q. 21, Wolfe, Q. 13, Little, Q. 14, and Spade, Q. 12). This is strong corroboration of their testimony that the device was set into a fibre base plate and did not protrude beyond the edge of the bench, because in that case the depending flanges of the angle irons would be imbedded in the fibre base and be concealed by it and by the fibre strip between them. These witnesses had no reason to take the machine apart as would be necessary in order for them to see the depending flanges of the angle irons.

Moreover, *defendant's* witnesses corroborate the clear and explicit testimony of these five men, to the effect that the machine is set up differently now from what it was originally, in that originally it did not project over the front of the bench as it does now. Thus Lipps says that it has been "altered repeatedly" and "*didn't stick out at all first*" (X-Qs. 76, 78, Vol. II, p. 923).

Defendant's witness Smith makes a similar admission at X-Q. 218, Vol. I, p. 510, saying that "the clamping device did not extend so far out past the edge of the bench at the Warren Electric & Specialty Company as it now does, as it is mounted".

Defendant's witness Craft admits that the machine as originally set up had fibre between the base plate and the bench (X-Q. 98, Vol. II, p. 781) and is unable to say that the machine projected over the bench (X-Q. 213, p. 789).

There was no reason why the device *should* project beyond the edge of the bench for butt welding the fan guard rings, for no part of the rings extended below the clamps in this operation. To have so arranged it would have made it weak because it would have been held in

place only by the rear bolts. It would also have been in the way of the workmen passing back and forth in front of the bench.

McBerty admits that when he found the device in the garret of the Peerless Company (successor to the Warren Company) in 1911 it was mounted on a slate base which "ran all the way under the plates" so that there was no room for the insertion of a fan blade (Vol. II, pp. 832, 833, X-Qs. 660-670).

Numerous other changes would have had to be made in this machine by McBerty besides cutting away the insulation fibre and moving the machine forward, in order to adapt it to do the work of spot welding fan blades to spiders. For example, the horizontal distance between the two base plates would have had to be increased from the $\frac{3}{8}$ inch which it was originally (McBerty, Vol. II, p. 828, X-Qs. 566-568) to the $\frac{3}{4}$ inch or so which intervenes between the two plates as the machine stands now (McBerty, X-Q. 569, p. 828), in order to make room laterally between the base plates to accommodate the fan blades and spiders. This would have necessarily involved:

(1) Cutting a new groove in the support or table into which the depending flange of one of the base plates was to be set;

(2) Putting in a new and wider piece of insulation fibre between the base plates at their rear;

(3) Relocating the vertical screw bolts attaching one of the base plates to the bench;

(4) Readjusting the horizontal bolt which holds together the rear ends of the base plates; and

(5) Removing altogether the forward horizontal screw bolt holding the two plates together, because with this bolt in place there would be no room for a fan spider with attached blades.

All this involves, as will be seen, a very considerable amount of work and readjustment, and it is incredible that if these changes had been made, such a man as L. C. Brewer, the first and only regular operator on the machine for four years, would not have known about them.

It is, therefore, clear:

(1) That the 1901 butt welding machine as originally built and set up could not possibly have been used for spot welding fan blades to spiders, because of the space limitations on the machine; and this is admitted even by McBerty. Exhibit B is *not* the machine as it originally was installed in 1901, but it is a mere 1917 reconstruction, with many new parts, and mounted in a vitally different manner. The pretence that its present mounting and arrangement is a counterpart of the 1901 mounting and arrangement depends purely upon oral testimony, and the inconclusive oral testimony of McBerty alone at that, which oral testimony is refuted by many witnesses.

(2) That the changes necessary to be made on this machine to make it possible for it to accommodate fan spiders and fan blades to be spot welded, were certainly not made until after April 29, 1901, is clear from the testimony of defendant's witness Lipps, whose date is established by the record evidence of his time book; whereas the contention of McBerty and his witnesses, on which this whole defence is predicated, is that complete fan blades and spiders were successfully welded on the machine in February, 1901. No witness claims that any practical use was made of the process after the "trayful of fans" alleged to have been made in February, 1901, were completed.

(3) That unless the unsupported word of McBerty alone is to be believed as against the testimony of half a dozen unprejudiced witnesses, he *never* made the changes in the machine necessary to adapt it to accommodate a fan spider with attached blades, *at least until years after*

1901; and, as we believe, not until after he got the machine from the garret of the Peerless Company in 1911 and reconstructed it in 1917 to use as an exhibit in support of his prior use contention.

We therefore contend with the utmost confidence that it is positively proved that McBerty's story of spot welding fan blades and spiders in 1901 on this machine *cannot be true, because of the space limitations that there then were in that machine.*

McBERTY COULD NOT HAVE DONE SPOT WELDING WHEN HE SAYS HE DID IT IN 1901 BECAUSE HIS TRANSFORMER WOULD NOT GIVE SUFFICIENT CURRENT.

We shall now show that it was impossible for McBerty to have done any real spot welding at all on his machine at the time in 1901 when he testified that he did it, for the reason that *the transformer which was used with it at that time would not provide sufficient current to accomplish spot welding* when connected up with a 250 volt primary circuit which was the only one available (Vol. II, p. 780, X-Q. 83).

This transformer, as shown by the transformer book of the Warren Company, was one which had been sent to Freehold, N. J., and had been returned to the Warren Company and delivered to its fan department on January 20, 1901 (McCurdy, Vol. I, p. 689; McBerty's letter, Vol. II, p. 945.)

This transformer record book produced by defendant's witness McCurdy contains what purports to be a complete record of the characteristics of the transformer in 1901. The record shows that there was *only one turn on the secondary* and the least number of available turns in the primary was 222 (Vol. I, p. 688). With a primary current of 250 volts pressure, which was alone used at the Warren Company plant (Vol. II, p. 780, X-Q. 83), there-

fore a maximum pressure in the secondary circuit of only 1.1 volts could be produced (Gravell, Vol. I, p. 355), * *which voltage is too small to do any successful spot welding, although it was sufficient to do the butt welding of the guard rings for which it was designed* (p. 357). This is a positive electrical fact testified to by Mr. Gravell. *It is in no way contradicted by defendant.*

It should be noted that the voltage used by defendant in its spot welding demonstration on Exhibit B at the Ford plant was $4\frac{1}{2}$ volts (Vol. II, p. 827, X-Q. 557).

In fact, with the transformer as it was originally the current was hardly sufficient even for butt welding. Little (Vol. I, p. 312, Q. 20), and Wolfe (p. 310, Q. 17), state that at first many of the butt-welded rings came apart at the welded joint.

The transformer was, therefore, changed, but not until after April 29, 1901, months after McBerty testifies that he did his spot welding and after spot welding had been entirely abandoned according to the testimony of both McBerty (Vol. II, pp. 830, 831) and Smith (Vol. I, p. 520). Defendant's witness Lipps expressly says in his affidavit, taken in 1913 with McBerty's knowledge and co-operation, that he "*recalls distinctly*" seeing McBerty change the device "*by putting in a transformer of larger capacity so that sufficient current could be supplied*", which change was made at some time after April 29, 1901, a date fixed by Lipps by his time book as that on which he returned to Warren from Cleveland (Vol. I, pp. 451, 452). He also so testified on the witness stand (Vol. II, p. 922, X-Q. 65). Defendant's witness Craft emphatically denies

*The secondary voltage bears to the primary voltage the same ratio that the number of turns in the secondary bears to the number of turns in the primary. So that with a given primary voltage and a given number of turns in the secondary, the less turns in the primary the higher the voltage in the secondary.

that the transformer now in the machine is the one which had been to Freehold (Vol. II, p. 779, X-Q. 70).*

McBERTY COULD NOT HAVE WELDED THE G-TYPE FAN SPIDERS TO FAN BLADES BECAUSE THOSE SPIDERS WERE BRASS — NOT STEEL.

We come now to the third of the three propositions which we have advanced as a positive demonstration that McBerty's story cannot be true.

McBerty's story is that for the season of 1901 the Warren Company was about to manufacture a new and cheap type of fan, known as the G-type fan which had sheet steel spiders and steel fan blades and that he spot welded these parts together for a dozen or fifteen of these G-type fans. His Exhibit M has in it a piece of such a sheet steel spider. If, however, it is not true that the spiders for the G-type fans were of steel in 1901 — if they were of brass, then the story necessarily breaks down, because it is impossible to weld brass to steel and of course McBerty does not claim ever to have done so (Vol. II, p. 1016). Were, then, the spiders for the G-type fans in 1901 of sheet steel, or of brass?

McBerty admits that in 1900 the Warren Company had only brass spiders, and no steel spiders (Vol. II, p. 713, Q. 21, p. 1019), and there is no contention that McBerty or the Warren Company ever had any steel spiders prior to

*The transformer book gives the secondary voltages as 2, 2½, 3, 3½ and 4. This is inconsistent with the fact that there was only one turn in the secondary provided the primary current is 250 volts (Gravell, Vol. I, p. 355). The book has been in McBerty's possession for some time (McCurdy, Vol. I, p. 688). The voltage figures might have been filled in at any time. *The "1" in the column which gives the number of turns in the secondary stands unchallenged as establishing its original condition.* This "1" could not have been altered or erased without some tell-tale mark, but figures like the voltages could be added in a blank space.

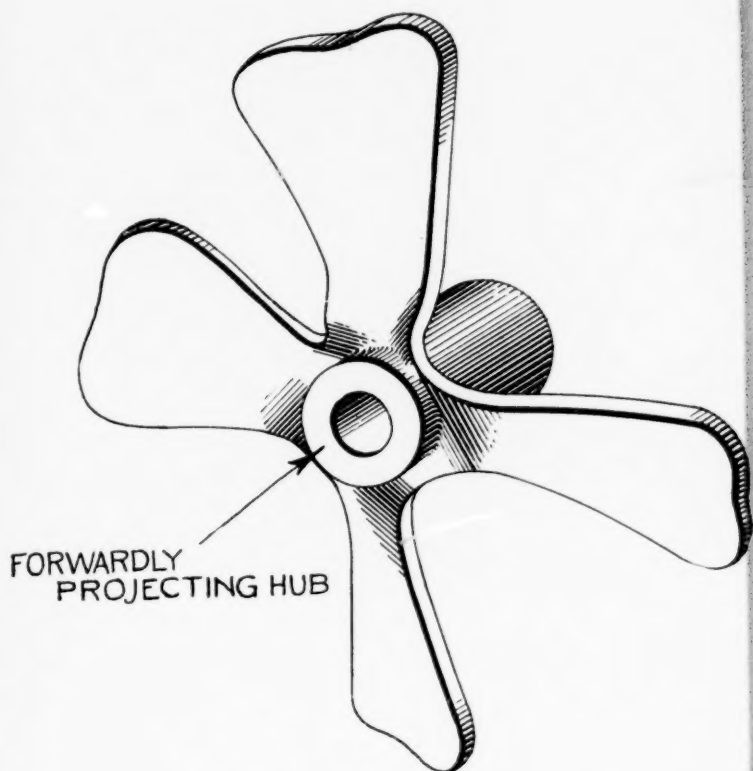
The secondary voltages obtained are not a characteristic of the transformer but they depend on the voltage of the primary current.

1901. McBerty says, however, that in the new G-type fans produced during that year (on a "trayful" of blades and spiders of which he claims to have done this spot welding), the spiders were made of rolled steel, *i. e.*, sheet steel (Vol. II, p. 726, Q. 102).

In considering the evidence on this matter, the Court should first have in mind the difference in appearance and construction between the brass spiders which the Warren Company had always used before and the sheet steel spiders such as McBerty untruly claims were used in 1901 on the G-type fans.

In a *brass spider*, the hub and projecting arms (to which the blades are to be attached) are all integral parts of one casting. The shape of such a cast brass spider is illustrated in the sketch on the opposite page, and it will be seen exemplified in Plaintiff's Exhibit No. 51, a fan identified by Mr. Binder as the Warren Company's 1901 G-type fan (Vol. I, p. 386). It is identical with the illustrations of these G-type fans at page 17 of "Defendant's Exhibit No. 2, Warren Electric Specialty Company's 1901 Catalogue" offered (Vol. I, p. 499). Note particularly that a portion of this hub projects forward of the point from which the arms extend.

The *steel spiders*, on the other hand, such as McBerty claims to have used, are made up of two non-integral parts joined together, — first, the spider proper, which is stamped out of sheet metal, and second, a cylindrical steel hub upon which the spider proper is mounted. The construction of these parts is explained by McBerty at Vol. II, p. 723, and we illustrate it by a sketch opposite page 167, Figures 1 to 4. It will be seen that the steel hub is provided with "a small projection or collar" over which the spider is fitted, the back of the spider resting against the shoulder on the hub and the collar projecting slightly through the hole in the spider. The spider is



CAST BRASS SPIDER.

SHEET STEEL SPIDER AND HUB.

Sheet Steel Spider



Fig. 1.

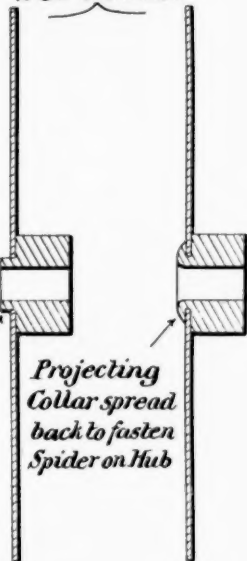
Hub



Projecting Collar

Fig. 2.

Spider Set on Hub



Projecting Collar spread back to fasten Spider on Hub

Fig. 3.

Fig. 4.

then attached to the hub by upsetting this projecting collar, as shown in Fig. 4.

It is upon sheet metal spiders of this construction that McBerty says he spot welded his fan blades in 1901 (Vol. II, p. 1019). Such spiders are shown in the cut at page 589 of the *Electrical World* for March 4, 1909 (Plaintiff's Exhibit 64), showing the "Peerless Fans" (Gravell. Vol. I, p. 362) then made by the Peerless Company the successor of the Warren Company, and in the cuts of the Peerless Company fans in the 1910 Peerless catalogue (Plaintiff's Exhibit 68, see pages 4-7).

McBerty says that these sheet steel spiders were used in the G-type fans in 1901 (Vol. II, p. 726, Q. 102; p. 1019).

But if the Court will now look at the illustrations of these G-type fans at page 17 of the Warren Company's 1901 catalogue, it will see that these illustrations contradict him. Both show a *regular cast brass spider* like all the other fans shown in the catalogue.

Confronted by this fact (and he admits that at least the cut of the G-1 fan on this page 17 does show the cast brass spider, Vol. II, p. 972, RDQ. 2), McBerty attempts to avoid the difficulty by explaining that *this cut does not show the standard construction of this fan* (RDQ. 2, p. 972), an explanation that, to say the least, obviously requires strong corroboration.

Now it appears (Vol. II, p. 760) that the defendant has had in its possession (or at least that it has had access to) a considerable number of these G-type fans of 1901. But defendant *produced none of these fans in support of McBerty's assertion that the catalogue illustration did not show the standard construction of the fan*, and this fact alone is, we submit, enough to discredit his testimony on the point. If the cut was wrong, an actual specimen of the fan would easily correct the error, but no such correcting specimen is produced. *On the contrary the specimen of this type of*

1901 G-1 fan which the plaintiff located and produced as Plaintiff's Exhibit 51 (Vol. I, p. 385) has this regular cast brass spider just as is shown in the catalogue.

McBerty's contention, therefore, that the G-type fans were made in 1901 with sheet steel spiders, is refuted by the record evidence of the catalogue — and also by the only actual specimen of that fan in evidence — Plaintiff's Exhibit 51.

But this is not all.

McBerty's statement is also definitely refuted by the testimony of the witness Binder, who was employed by Vallee Brothers of Philadelphia, sales agents for the Warren Company's fans during the year 1901 and later (Vol. I, pp. 384, 385), and who is therefore thoroughly familiar with the Warren Company's output, and who says of that company's 1901 fans (Vol. I, p. 386, Q. 16):

"At that time I can say *the universal construction was to make the spider on which the blades were mounted of castings*, and that was subject to breakage, a certain chance of breaking the spiders. *In later years that was changed to make these spiders of stamped metal.*

"Q. 17. Does what you have just said apply to the Peerless fans?

A. Peerless fans and other fans also."

Not only, then, is McBerty's story that in 1901 the spiders of the G-type fans were made of sheet steel, and not of cast brass, contradicted by the record evidence furnished by the catalogues and by a sample of the fan itself, but it is definitely contradicted by the witness Binder, whose business it was at the time to know the construction of these fans, and to sell them.

The story is, moreover, extremely improbable when one considers the fact that the very purpose for which this G-type fan was gotten up was to produce a fan which

would be *less expensive* to manufacture than the others, and could be sold cheaper; whereas the change from a cast spider to a sheet steel spider would inevitably have caused a large increase of cost. Such a change would have required much new apparatus and new and expensive hand operations. By way of new apparatus, there would necessarily have been required, 1st, a die to stamp out the spiders; 2d, a die to punch the central hole in the spider and the rivet holes in its arms; 3d, mechanism for forming a steel hub and cutting a collar on it; 4th, an upsetting die for upsetting the projecting end of the hub over the spider to fasten it in place.

This would have involved also new manufacturing operations as follows: — 1st, the work of stamping out a spider; 2d, the work of punching the central hole in the spider; 3d, the lathe work necessary to shape the hub and cut away the collar on it, an extremely expensive operation unless special automatic machinery involving heavy expense was procured; 4th, upsetting the end of the hub of the spider so as to fasten the two parts together.

That the Warren Company should have substituted a sheet steel spider, involving all these operations and apparatus, for a simple cast metal part, in a new fan which they were getting out with the one object of *reducing cost* when they were making no such change in the rest of their output, would be so absurd that the story that it was done would be unbelievable, even if it were not definitely contradicted definitely in so many other ways.

The story is inconsistent with the excuse that McBerty gives for the abandonment of the alleged spot welding process, namely, that it would require the purchase of an additional welding machine, jigs, etc., which would have involved "added equipment" (Vol. II, p. 946) and "further expenditure" (Vol. II, p. 869).

Later on, in 1909 or thereabout, the Peerless Company,

successor of the Warren Company, adopted the sheet, metal spider on all its fans, and the McBerty Exhibit M, spuriously dated 1901, is doubtless composed of one of these spiders of 1909, or later, attached to a fan blade.

We submit, therefore, that the proposition advanced by McBerty that the G-type fans upon which his alleged work was done in 1901 had sheet steel spiders (a proposition absolutely necessary to his story) is positively disproved.

THE "CORROBORATING EVIDENCE" PRODUCED BY DEFENDANT TO SUPPORT McBERTY'S STORY ON ANALYSIS WHOLLY FAILS TO CORROBORATE IT.

The evidence produced by defendant to corroborate McBerty's story told in this case may be summarized under three heads: *first*, and foremost, the cut of the G-2 fan in the Warren Company's 1901 catalogue, which defendant alleges shows a fan with spot welded blades and spider, one of the "trayful", made by McBerty in 1901; *second*, the physical exhibits produced as contemporaneous specimens of McBerty's 1901 work, notably Exhibit M; and *third*, the oral testimony of other witnesses called to corroborate McBerty.

We shall take up these several points in order and show the Court that none of the three gives any support to McBerty's present story.

THE CUT OF THE G-2 FAN IN THE WARREN COMPANY'S 1901 CATALOGUE.

On page 17 of the Warren Company's 1901 catalogue (Defendant's Exhibit No. 2) appear two cuts, showing respectively the G-1 and the G-2 fans.

The defendant triumphantly points to the cut of the G-2 fan, saying that it does not show any rivet heads, and therefore claims that here is record evidence in support of

McBerty's contention as to the trayful of spot welded fan blades and spiders made in the year 1901.

Upon this cut, which was not referred to in the story told in 1913, to Mr. Howe or to McBerty's counsel, McGill, is largely built the defendant's case. As we shall see later, in collecting evidence for the defendant in this case this cut was shown by McBerty and by defendant's agent, Smith, to the witnesses who have testified for the defendant, with the assertion that it proved the spot welding contention; it has been used as a means of "refreshing" the memory of these witnesses, practically all of whom, as we shall later see, remembered nothing of the kind in 1913.

We point out in the first place that there is a discrepancy in the testimony of McBerty himself on this point, for he said in his answer to Q. 92, Vol. II, p. 724 (just before the catalogue was handed to him for identification by his counsel), that the alleged 1901 spot welding was done "*on the small fan*," that is to say, on the 12-inch or G-1 fan shown at the left of the two cuts in the catalogue, as distinguished from the larger 16-inch G-2 fan shown at the right. *But rivet heads can be clearly seen on this small G-1 fan*, as McBerty admitted in his answer to Q. 95, page 725, so that the *small* or G-1 fan was certainly not spot welded as McBerty first testified. The witness Craft, whose recollection was "refreshed" by conversations with McBerty (p. 795, RXQ. 263), also stated that it was the small or G-1 fan that was spot welded (Vol. II, p. 792, X-Qs. 244-247).

It is not necessary, however, to enlarge upon this discrepancy, for there are more fundamental and absolutely unanswerable reasons why this cut fails to support the McBerty story.

*The Catalogue is Proved by Defendant's Own Witnesses to
Have Been Published at a Time Before McBerty
Claims to Have Done or Could Have Done
any Spot Welding.*

It will be remembered that McBerty claims to have done his spot welding on these fan blades and spiders only in *February, 1901*, and says that this Exhibit M, which has stamped on it the date *February 15, 1901*, was his first piece of work (X-Qs. 425-429, Vol. II, p. 820.) We quote:

"X-Q. 425. How do you identify February as the month?

A. I identify February as the month on account of my first piece of work being produced, which was produced in February. . . .

X-Q. 427. That has stamped on it February 15, 1901, I believe?

A. Yes, sir.

X-Q. 428. Had you made any complete four-bladed fan blades at that time?

A. I think not. Otherwise it would not have been stamped as my first production along those lines.

X-Q. 429. Had you made any before that?

A. No."

Indeed, the butt welding machine on which McBerty claims to have done the spot welding was not put into use until after January 20, 1901, for it was on that date that the transformer was first turned over to the fan department of the Warren Company (Vol. I, p. 689).

These alleged spot welded G-2 fans, then, were certainly not made until after February 15, 1901. But defendant's witness Sawyer, who was called by defendant to identify this catalogue, says that it was "undoubtedly published and printed in 1900, along in December, probably"

(Vol. I, p. 682), that is to say, **some two months before McBerty on his own testimony ever spot welded a fan spider and blades.**

Mr. Estabrook, defendant's witness who produced his catalogue, explained that the fan season — that is, the period when the contracts for the sales of the fans are made — is January, February and March, and that the catalogues are gotten out *in preparation for that selling season* (Vol. I, p. 676). McBerty himself confirms this, saying (Q. 109, Vol. II, p. 728):

"We issued one catalogue per year, and this was brought out sufficiently early to get in the hands of the jobbers *before the fan season started.*"

February, he says, was "late in the season" (Vol. II, p. 856, X-Q. 963).

In fact, the advertisement of the Warren Company in the *Electrical Review* for *November 21, 1900*, Plaintiff's Exhibit 53, page 12, indicates that the catalogue was ready or about to be ready as early as this date, November 21, 1900, for it says:

"Peerless incandescent lamps, fan motors, transformers are made on honor, no disappointments when used, *send for catalogue, prices right.*"

Such an invitation would hardly have been issued unless there were catalogues ready to be sent to inquirers.

It is therefore established by defendant's own witnesses, including McBerty himself, that this catalogue was issued at least as early as December, 1900, long before any spot welding could possibly have been done or is claimed to have been done by McBerty.

Defendant's witness Roberts (Vol. I, p. 693) produces a ledger entry dated March 19, 1901, of the R. W. Roberts Company which published some of the Warren Company's

catalogues, which entry he says was probably for the printing of this catalogue. This entry was not made, he says, *until after the last shipment of the issue was made*, and as the deliveries might well have been made piece-meal, this proves nothing as to the date when the catalogue was printed (p. 695). Indeed Roberts' testimony strongly corroborates that of the other witnesses, for it is obvious that there would not have been time between February 15 and March 19 for the experiments to be concluded, jigs made to hold the blades and spiders during welding, a complete fan to be assembled, japanned and photographed, a cut made from the photograph, and the work of printing and binding 3,000 to 5,000 catalogues (p. 693) done.

The evidence above stated as to the date of publication of this catalogue, which is obviously enough to demolish McBerty's pretensions as to the significance of the cut, stands, then, absolutely uncontradicted, and it comes from defendant's own witnesses.

The Catalogue Cut Shows a Riveted and Not a Rivetless Fan.

Even if the cut did not show rivet heads on the faces of the blades, no inference could be drawn that there were no rivets in the actual G-2 fan. Mr. Turner, a professional photographer, explains (Vol. I, p. 306) the manner in which such a cut is made. The original negative is treated with an "air brush" which may eliminate such details as rivet heads, and then the negative is retouched before the cut is made. In the retouching process an unimportant detail like a rivet head may or may not be restored by the photographer. This is illustrated by comparison of an original photograph of a riveted fan made by Mr. Turner (P. Ex. 34, Vol. I, p. 485) with a cut made from that photograph treated with an "air-brush" in the usual manner (P. Ex. 37, Vol. I, p. 487). The photograph clearly shows the rivets, but the cut shows none.

An examination of the other cuts in this catalogue of 1901 shows that rivet heads are sometimes not shown on admittedly riveted fans. See, for example, the cuts of the blades of the E-2, E-3 and G-1 fans in this 1901 catalogue, in some of which some of the rivet heads are lacking while in others they are shown. It may depend largely on the amount of light thrown on the fan blade. Thus in the cut of the G-1 (p. 17) fan three of the blades are comparatively unlighted and no rivets are seen, but in the portion of the fourth blade exposed to direct light they stand out clearly. No part of the blades in the G-2 cut appears to be exposed to a direct light.

McBerty explains the failure of the rivets to appear on some of fan blades in certain of these cuts by saying that the rivet "does not always show in the figure, depending upon the way the light strikes the fan blade" (Vol. II, p. 872, X-Q. 1205), an explanation which is entirely sufficient to account for the absence of any appearance of rivets on the faces of the fan blades in the G-2 cut.

Conclusive evidence that the absence of a showing of rivet heads on the faces of the blades is no proof that the blades were spot welded is furnished by the fact that the 1903 catalogue of the Colonial Fan Company, the selling agent of the Peerless Company (Sawyer, Vol. II, p. 1009), *shows two cuts of fans in neither of which are there shown any rivet heads on the blades* (McBerty, Vol. II, p. 1019). There is no suggestion or pretense that any 1903 fans were spot welded. On the contrary both McBerty (pp. 830, 831) and Smith (Vol. I, p. 520) state positively that no spot welding was done after 1901.

Some of the Warren Company's fan blades were countersunk so that the rivet head was flush with the front surface of the blade, the rivet projecting only behind the spider (Brewer, Vol. I, p. 287, Q. 32); and here again is a

reason why the rivets, when the blades were covered with a coat of japan, might not show in a photograph, or be noticed by a casual observer.

The mere fact, therefore, that a cut of a fan shows no rivet heads on the blades is not proof by any means that such blades were spot welded.

But as a matter of fact, while no rivet heads are to be seen on the *faces* of the blades in the cut of the G-2 fan on page 17 of the 1901 catalogue, *a rivet head does indistinctly appear upon the rear side of the downwardly extending blade* (Wagner, Vol. I, p. 344; Gravell, Vol. I, p. 322), as careful examination of the cut will show. Although McBerty was called twice in sur-rebuttal he did not venture to deny the testimony of plaintiff's witnesses to this effect.

In working up the McBerty story for the purposes of this case photographs of this misleading cut were taken about by the defendant's investigator and witness. Mr. W. E. Smith, by McBerty, who interviewed the other witnesses, and by defendant's counsel,* and they, with 1917 photographs of the welder, Exhibit B, in the process of spot welding a fan blade to a spider, were undoubtedly used to convince witnesses, whose own personal recollection was lacking, that fans with spot welded blades were manufactured by the Warren Company in 1901.

But the fact is that the catalogue illustration could not possibly show a spot welded fan sold by the Warren Company, because it was printed and published at a time before any spot welding could possibly have been done or is claimed to have been done by McBerty and that *the catalogue illustration does not show a rivetless fan at all.*

*Such photographs are in evidence in Plaintiff's Exhibits No. 38 and No. 39, which were shown by W. E. Smith to L. C. Brewer, the regular operator of the machine from 1901-1904, in an unsuccessful effort to persuade Brewer to remember spot welding (Vol. I p. 275).

**THE EXHIBITS IN EVIDENCE PURPORTING TO BE
SPECIMENS OF McBERTY'S 1901 WORK.**

Exhibit H.

The only specimen purporting to represent McBerty's 1901 work in the case, which is identified by any other witness than McBerty himself, is Exhibit H attached to Lipps' affidavit of 1913, put in evidence by plaintiff. As proved by Lipps' time book, his first acquaintance with McBerty's work was after April 29, 1901 (Vol. I, p. 451). This exhibit H consists of a pair of halves of thin steel armature lamination discs stuck together. Lipps states in his affidavit that it has been in his possession ever since it was made in 1901, and that he saved it "*as a kind of a sample*" of McBerty's 1901 experiments (Vol. I, p. 453).

This exhibit may be authentic, *but it is not spot welding*. It is what is known as a "stick" (Gravell, Vol. I, p. 323; Wagner, p. 345), and is exactly what would result from an attempt to weld with a current of only about one volt, which was the maximum pressure of the welding circuit that the 1901 transformer was capable of supplying. A "stick" results from the mere fusing of the oxides on the surfaces of the metal pieces and is to be sharply distinguished from a real spot weld, in which the metal in the body of the metal pieces fuses and merges (Vol. I, p. 369). No one would assert that Exhibit H is a specimen of real spot welding. *But Exhibit H represents the nearest approach to spot welding that could have been done on the machine equipped with the transformer which McBerty had in 1901 when supplied with the primary current of 250 volts used by the Warren Company.*

Exhibit H is a piece of most convincing evidence against McBerty's claims. Lipps naturally would have preserved as good a sample of McBerty's experimentation as there was, if he preserved any at all. That he

produced nothing better than this useless "stick" is most persuasive proof that McBerty produced no real spot-welds.

Defendant's counsel very significantly failed to ask Lipps anything about Exhibit H, and it was reserved for the plaintiff to put it in evidence along with Lipps' affidavit.

McBerty's Newly Produced Specimen, Defendant's Exhibit M, is Spurious.

We have previously pointed out that Mr. Edwards, counsel for the defendant in the Barney & Berry case, after examining the affidavits and evidence collected by Mr. Howe in 1913 and after talking with McBerty, concluded that it was useless to rely upon the alleged McBerty prior use, as well because it was not proved as because at best it amounted only to an abandoned experiment. There was *no record evidence* in support of the story, such as is necessary in order to comply with the established principles of law regarding the proof of prior use.

We have above shown that in the effort to avoid the criticism of "abandoned experiment" McBerty has now enlarged his story by telling about a trayful of fan blades and spiders which he asserts he spot welded and which he says went into the commercial output; and we have shown that that addition to his story is untrue.

We now shall deal with the second new addition to the McBerty story, which he has for the first time brought forward in this case and by which he hopes to supply the element of contemporaneous dated evidence, previously lacking. That is his Exhibit M, which he now produces as a specimen of his work done in February, 1901, and contemporaneously dated. It consists of a piece of spider made of sheet steel, spot welded to a fragment of a steel

fan blade which is nickel plated. The exhibit is stamped with the date "2-15-01" and with McBerty's name.

McBerty's statement as to this exhibit is absolutely uncorroborated. The exhibit is not identified by any other witness in this case.

The exhibit was certainly very new in appearance for an article made 18 years before it was introduced in evidence and kept loosely in a tool box ever since, and the marking on it might have been done yesterday. The exhibit is, we confidently submit, of recent origin, and McBerty's testimony regarding it is not the truth.

In the first place, the spider is of steel, whereas as we have shown in a previous section (p. 165), there were no steel spiders available to McBerty in 1901, but only in subsequent years. They are shown first in the Peerless advertising matter in 1909.

In the second place, the blade is copper-and-nickel plated (Vol. I, p. 346, Q. 16); but the G-1 and G-2 fans were the only ones made by the Warren Company in 1901 with blades not made of brass (Vol. II, p. 712), and the blades of the G-1 and G-2 fans *were finished in plain black enamel*. This is definitely proved by the description of these fans on page 17 of the 1901 Warren Company Catalogue, Defendant's Exhibit 2 containing the cuts upon which defendant places so much reliance. This catalogue description reads as follows:

"Types G-1 and G-2 are rigid iron-clad fans of symmetrical design and strong mechanical construction. *The finish throughout is plain black enamel.*"

The fact that the 1901 steel fan blades were finished in black enamel is corroborated by defendant's witness Craft (X-Q. 229, Vol. II, p. 790), and by the sample of this 1901 G type of fan (Plaintiff's Exhibit No. 51) which we located and produced in evidence by the witness Binder

(Vol. I, p. 385); nor is it denied by McBerty or any other witness.

The truth is that in 1901 there were no nickel-plated steel blades.

In 1902 a change was made in the finish of the blades for the G-1 and G-2 fans, and in that year they were nickel plated. The legend at the foot of the cuts of these fans shown in the Peerless Company's 1902 catalogue (Defendant's Exhibit I) at page 11, shows this, and McBerty admits that this change was made in 1902 (p. 728, Qs. 113, 114). He testifies as to this change (Q. 114, p. 728):

"Instead of supplying a black japan finish over the entire fan, they have changed the finish from black japan to nickel plate as far as the guards and the blades are concerned."

It was not until at least 1902, men, that any nickel-plated fan blades were available to McBerty.

Careful inspection of this Exhibit M furthermore, shows the marks of rivet heads about the rivet holes (Gravell, Vol. I, p. 324, Q. 22; Wagner, p. 346). This means that the blade had at some time been riveted and that the rivets were taken out and the blade spot welded to the spider arm. All the circumstances indicate that McBerty made this exhibit at some comparatively recent time by removing the rivets from an old fan blade and spot welding the blade to a modern sheet steel spider arm. But when he did it *he forgot that there were no such nickel-plated fan blades in 1901.*

Equally convincing evidence that Exhibit M is spurious is the fact that McBerty, who says that he found this exhibit in his tool box in 1911 (*supra*, p. 146) never showed it either to his attorney, Mr. McGill, who made a thorough investigation of the subject-matter in the early part of

1913, or to Mr. Howe, who, in the latter part of 1913, spent two weeks with him in investigating the story, getting affidavits of numerous witnesses, including McBerty himself, and collecting evidence for use in the Barney & Berry case. It was just this kind of dated evidence that these attorneys were looking for. Mr. Howe particularly testifies how keenly alive he was to the necessity of having some such evidence (*supra*, p. 144).

McBerty's letter to his attorney, Mr. McGill, of January 2, 1913 (dated January 2, 1912, by mistake), said (Vol. II, p. 945):—

"I have also samples of spot welding which was done on the welder at the time we did this experimenting, and while *we are unable to identify the exact date* we can approximate it within two or three months."

McBerty's statement to Mr. McGill that he had no means of identifying the exact date of his experimenting is utterly inconsistent with his possession at that time of this dated specimen. McBerty's statement that he deliberately held the specimen back from Mr. Howe (Vol. II, p. 843, X-Q. 841) is wholly incredible in view of the weeks of time and effort that he put into collecting evidence for Mr. Howe and of what McBerty had at stake.

It is putting the matter mildly indeed to say that Exhibit M is not proved by that degree of evidence which is requisite for prior use testimony.

We go so far as to say that in all probability this McBerty Exhibit M was fabricated after April, 1918, when McBerty's corroborating witness, William E. Smith, testified. It is only reasonable to suppose that had this Exhibit M been in existence at the time of Smith's testimony, he would have known about it and testified concerning it. Smith's silence as to this exhibit in his testi-

mony of April, 1918, strongly indicates its non-existence at that time.

Other Specimens of McBerty's Alleged 1901 Work.

In connection with the affidavits which were obtained by Mr. Howe in 1913 from McBerty, Lipps and Brown, there were produced four physical exhibits, namely, Exhibits O and P attached to McBerty's affidavit, Exhibit H attached to Lipps' affidavit, and Exhibit B attached to Brown's affidavit. These exhibits — the only ones in the case except Exhibit M — further discredit McBerty's story of 1901 spot welding.

Exhibit H we have already mentioned. It is produced and identified by Lipps as having been in his possession since some date in 1901 after April 29.

It is a mere "stick" such as might well have been made with the machine and transformer as it was in 1901. It is in no sense an example of successful spot welding, and no one asserts that it is.

Exhibit B, attached to Brown's affidavit, was not produced as a 1901 sample, for Brown in his affidavit merely said that it was like what he saw in 1901 (Vol. I, p. 481). McBerty's affidavit says nothing about this sample, and its origin is wholly unexplained. No reference is made to it in the testimony in this case.

Exhibit O and Exhibit P are two specimens produced by McBerty in connection with his affidavit of 1913. McBerty there alleged that these were made in 1901. *He makes no such assertion in his present testimony* for the good reason that they could not have been made in 1901.

Defendant did not even offer these exhibits in evidence in this case. McBerty was not questioned about them except in connection with his cross-examination. They were put in evidence by plaintiff together with the McBerty 1913 affidavit.

Each of these two exhibits is made from a piece of a steel spider and a piece of fan blade. But there were no steel spiders available to McBerty in 1901 (*supra*, p. 165). The fan blade of Exhibit O is made of steel which is copper plated and oxidized (Wagner, Vol. I, p. 345), and that of Exhibit P is made of steel which is copper and nickel plated. But there were no fan blades of steel which were copper plated and oxidized or copper and nickel plated available to McBerty in 1901; *the only steel blades which the Warren Company had in that year were finished in black enamel*, as we have pointed out above, p. 179.*

*Exhibit P is closely related in origin, evidently, to Defendant's Exhibit M, upon which McBerty now places such reliance. It will be remembered that Exhibit M is the specimen produced by him in this case for the first time, bearing the date stamped on it "2-15-01" and McBerty's name, this being the sample which now turns up for the first time and which he never showed or mentioned either to Mr. Howe or to his own attorney, Mr. McGill and to which he did not refer in his affidavit of 1913. The piece of a spider included in Exhibit P was evidently cut off from the piece of spider included in Defendant's Exhibit M, since the two parts fit together.

McBerty asserted on the stand that when he put the story up to his attorney, Mr. McGill, early in 1913, he cut the sample of his work which he then had in two, keeping one part of it and giving Mr. McGill the other part, and that this other part which he gave to Mr. McGill was what he showed Mr. Fish at his interview in 1913 (Q. 179, Vol. II, p. 738; Q. 182, p. 739; pp. 267, 268); and he says Exhibit M is the part which he retained and which never left his possession (Q. 150, Vol. II, p. 733; Q. 154, p. 735; Q. 254, p. 753). Apparently this Exhibit P is what McBerty had in mind in this testimony, for the sample which he gave Mr. McGill and which was turned over to Mr. Edwards was annexed to his affidavit prepared by Mr. Howe (Edwards, Q. 10, Vol. I, p. 291; Q. 11, p. 292). At all events these samples annexed to the affidavits are the only ones which we know anything about. McBerty's story is very much mixed, for the Exhibit P, while its spider part was evidently cut from the spider part of Exhibit M, does not match up with Exhibit M in the way in which McBerty said that it should.

McBerty admits that Exhibit P was not made at the same time as Exhibit M and not until long after, because he says that the piece which has been cut from the fan blade of Exhibit M and which he says appears in Exhibit P was not cut off from Exhibit M until "quite a long while" after the fan blade of Exhibit M was welded to the spider (Q. 258, Vol. II, p. 754).

The blade of Exhibit O has been welded to the piece of spider arm *after* the spider arm was cut off from the rest of the spider, as shown by the blueing or heat marks on the cut surface of the spider arm caused by its oxidizing in the air when the blade was heated in welding (Gravell, Vol. I, p. 323, Q. 15, 16).

Concentric marks around the two rivet holes in the blade of this exhibit show that it was once riveted (Gravell, Q. 17).

The cut end of the spider arm of Exhibit P shows the same blueing as in the case of Exhibit O, and indicates that this exhibit also was welded *after* the spider arm was cut (Gravell, Q. 19).

The indentations on the backs of the welds of Exhibits O and P are perpendicular to the surface. If they had been made on blades attached to a spider the indentations would have been slightly oblique because the spider with blades attached would have to be put into the machine at a slight angle, as was demonstrated in the operation of the machine at the Ford plant (Gravell, Q. 27-29).

The evidence afforded by these exhibits themselves shows, therefore, that they could not have been welded in 1901 because neither blades so finished nor sheet steel spiders were available in that year.

The heat marks of the welding that appear on the surface of the cuts show that the spider arms were cut before the blades were welded to them. This completely refutes McBerty's assertion that he welded these blades to a spider which was afterwards cut into pieces.

That these exhibits were probably welded some time after 1909 is shown by the fact that no such sheet steel spiders were in existence at the Peerless plant before that year.

These two exhibits P and O are not vouched for by any witness whatever in the present case; even McBerty appears to rely upon them no longer, for, as we have said,

they were not mentioned by him except in connection with his cross-examination.

The upshot of the whole situation, then, so far as the exhibit specimens are concerned, is that there is no single exhibit purporting to have been made in 1901 which is identified by anyone but McBerty himself except Exhibit H, the "stick" produced by Lipps which is not spot welded at all; that McBerty no longer relies upon or testifies about any exhibit other than Exhibit M, the dated specimen which turns up for the first time in this case, and that Exhibit M, like the other specimens except Exhibit H, bears on its face evidence that it could not have been made in 1901.

THE "CORROBORATING" WITNESSES.

We have shown that there is nothing whatever in the nature of *record evidence* to support McBerty's story — none of the "*concrete, visible contemporaneous proofs which speak for themselves*" which experienced courts require to support a prior use contention (*Emerson & Norris Company v. Simpson Bros.*, 202 Fed. 747, C. C. A. First).

The machine, *Exhibit B*, we have shown, *supra* p. 150, to be nothing but a mere recent reconstruction embodying certain parts only of the old 1901 butt-welding machine, and mounted in a vitally different manner from that in which the 1901 butt-welding machine was mounted; and its alleged similarity to the 1901 machine depends absolutely upon oral testimony, and at that upon the oral testimony of McBerty alone, contradicted by some half dozen thoroughly reputable and disinterested witnesses, called by the plaintiff as well as by a number of witnesses of the defendant.

No specimen of a fan having spot welded blades, such as McBerty claims that the Warren Company sold, to the number of a dozen or fifteen, is produced, although defendant says that it has spent much money and effort in the

attempt to locate such a specimen. It is likely that if there ever had been a dozen such fans made it would be possible to produce at least one, as a result of all this search.*

The *catalogue cut* of the G-2 fan which is so much relied upon in support of McBerty's contention is shown to be no support at all, for the catalogue is proved by defendant's own witnesses to have been published months before McBerty claims to have done his work, and even before the machine on which he claims to have done the work was installed; and, moreover, it does not show a rivetless, but a riveted, fan.

There is nothing in the nature of a *contemporaneous specimen of McBerty's alleged 1901 spot welding work in evidence that is identified by any other witness than McBerty himself, except Exhibit H*, produced by Lipps, which he could not have seen made till after April 29, 1901, and

*Defendant has found numerous fans of the G type in question (Vol. II, p. 760), but has not produced one of them. We ourselves have located and put in evidence one such fan (P. Ex. 51; Vol. I, p. 382). *None of these had spot welded blades.*

No such spot welded fan has been produced — for the reason that no spot welded fan ever existed.

The story by defendant's witness, Ensor, that he saw a fan with rivetless blades in the junk room of the Peerless Company in 1911 is merely uncorroborated memory and of course a fan which appeared for the first time in 1911 is utterly of no consequence. It was in the Peerless junk room that McBerty in the same year, 1911, found parts of his old welder and transformer (Vol. II, p. 832). If there had been in that room in 1911 a fan with blades spot welded by him in 1901, it is impossible that he should not have found it and kept it as pretended proof of his alleged 1901 spot welding.

Defendant's witness, McDonald, who remained with the company for years, asserts particularly that no spot welded fan ever came back and therefore none could have been in the stock room, where returned fans were kept (Vol. II, p. 882, Q. 63).

McBerty also made a thorough search for a spot welded fan or such a "fan blade independent of the motor" in the plant of the Peerless Company in 1913 (Vol. II, p. 961, Q. 7), but he did not find any such thing.

therefore contradicts McBerty's story of successful spot welding in February, 1901. This exhibit is a mere "stick", not a true spot weld at all, and not pretended to be such by the defendant. By itself it goes very far to prove that McBerty's experiments in 1901 did not produce successful spot welding, for otherwise Lipps would have preserved a sample of such welding instead of this unsuccessful "stick". Exhibit M, the dated specimen now produced by McBerty, but identified by no other witness, is clearly shown to be spurious, — manufactured as we believe for the purposes of this case, and at any rate a recent construction.

There were, however, a number of witnesses called by the defendant who, speaking purely from memory nearly eighteen years after the event, and after having their memories artificially "refreshed" by being shown the misleading catalogue cut of the G-2 fan, the reconstructed and changed Exhibit B, and alleged samples of spot welding done on it, purport to give testimony in corroboration of some parts of McBerty's story.

McBerty himself is clearly discredited as a witness. That circumstance goes far towards overthrowing the entire prior use story. He is the mainstay of the defense, the central prop of the entire fabric. In all the cases of a discredited attempt to defeat a patent by an alleged prior use, the courts have recognized that if the story of the man whose work is relied upon is false, the testimony of those who are merely called to corroborate him is subject to suspicion. The courts know how easy it is to excite in such corroborating witnesses a recollection of facts that, never existed, particularly if they are skillfully approached with such significant refreshers of their memories as the cut in the 1901 catalogue and the reconstructed machine Exhibit B. In many such cases the controlling circumstance has been the breaking down of the story of the

main witness. If his testimony is shown to be false or ineffective, the rest of the case should in almost every instance fall with it. In many cases distrust of the main witness has largely contributed to disbelief in the whole story.

In the *Telephone Cases* (126 U.S. 1) not one only but several men, after Bell's patent came out, claimed that they had made the invention years before. Drawbaugh was one of these alleged prior users, and he supported his claims by *not less than two hundred witnesses* who swore in court that they were familiar with his telephone many years before Bell's invention was made. The court, however, recognized that it was simply impossible that anyone could have achieved Bell's result so many years before and have done no more about it than Drawbaugh did. The court said (p. 567):—

“We do not doubt that Drawbaugh may have conceived the idea that speech could be transmitted to a distance by means of electricity, and that he was experimenting on that subject, *but to hold that he had discovered the art of doing it before Bell did would be to construe testimony without regard to ‘the ordinary laws that govern human conduct.’*”

In another of the telephone cases, namely, *American Bell Telephone Co. v. American Cushman Telephone Co.*, 35 Fed. 734, another prior use was urged and supported by the testimony of a number of witnesses whose honesty the court (Judge Blodgett) did not question. The court, however, concluded that Cushman's imagination had been made morbidly active by seeing the fame and success of Bell, and that he had “clothed what he did in those past years with a light reflected from the success of others, and his statements of what he did then have unconsciously

colored the testimony of many of those he has called to support him”.

In the Edison Incandescent Lamp cases, after the patent had been sustained in a hard-fought litigation, the patentee was confronted with an alleged prior use of one Goebel, whose story was corroborated by *not less than 40 witnesses*. Here again, as in the case at bar, the facts relating to the alleged prior use had been investigated by the defendant in the first case, and the defense found insufficient. It was rejected as inherently improbable in *Edison Electric Light Co. v. Beacon Vacuum Pump etc. Co.*, 54 Fed. 678, 692, Circuit Court District of Mass., and in *Electric Mfg. Co. v. Edison Electric Light Co.*, 61 Fed. 834, C. C. A. 7th Circuit.

In the case at bar there is not only the same inherent improbability of successful prior use as in the *Telephone* and the *Incandescent Lamp* cases, but there are proved by competent evidence, mainly supplied by defendant's own witnesses, a number of facts which convert that improbability into an impossibility. These facts not only contradict McBerty in every important circumstance relating to his alleged prior use of spot welding in 1901, but also explain how the witnesses called to corroborate McBerty were misled by him and by his fabricated evidence, including apparently authentic but really false and misleading photographs of his welding machine the deceptive and misleading cut of the G-2 fan in the 1901 catalog, and of its supposed 1901 spot welding product, and samples of spot welding alleged by him to have been made in 1901 but now proved to have been made of blades and spiders which did not exist in that year.

While we cannot believe it to be necessary, we will briefly analyze this memory evidence—given *eighteen years* after the event—upon which defendant must rely, to substantiate McBerty's story.

The alleged corroborating witnesses, who testify for defendant in this case, are Craft, Powers, Gilder, McDonald, Lipps and Smith.

Powers and Lipps.

As to the witnesses Powers and Lipps, there is nothing whatever in their testimony inconsistent with our proposition that what McBerty did was an abandoned experiment. Both of these men say that what McBerty did was purely experimental. "They were not going through the commercial part of it"; "Just experimental" (Lipps, Vol. II, p. 923, X-Qs. 83-85).

Powers says that "all of the spot welding that I can recall was experimental" and he never saw any complete fan blades and spiders spot welded by McBerty (Vol. II, Q. 35, p. 875; Q. 39, p. 876). The exhibit produced by Lipps, "Exhibit H", as a sample of the work that McBerty did in 1901, even assuming that it is authentic, is nothing but a mere "stick". It is not spot welded at all, and is just the kind of work that might have been done with a transformer of the small capacity which McBerty's transformer had in 1901 which could not supply adequate current to make a spot weld.

Craft, McDonald and Gilder.

Each of these witnesses was interviewed in 1913 by Mr. Howe, in company with McBerty, and *each and every one of them at that time, which was six years nearer the date of the circumstances as to which they were testifying, had little or no recollection of the alleged spot welding about which they now glibly testify.*

Craft, when interviewed in 1913 by Mr. Howe and asked for his recollection regarding the matter, said that he did not recollect the matter very much and refused to give a affidavit (Howe, Vol. I, p. 304, Qs. 16-18). Craft himself admits that

"I told him I was hazy about this spot welding, and **I didn't feel as I remembered it then that I could possibly state about the spot welding end of it.**" . .

"I had forgotten the whole circumstances for several years, of course." (RX-Qs. 262-264, Vol. II, p. 795.)

Craft even now admits that he *never saw any spot welding* (Vol. II, X-Q. 87, p. 780); he merely says that he *was told by McBerty* that some fans that were shown to him were "spot welded".

McDonald likewise was interviewed by Howe in 1913 and "did not seem to have much recollection in regard to the early welding" (Howe, Vol. I, p. 301), although McBerty and Howe "used every effort to stimulate his recollection by suggesting things" (Howe, Vol. I, p. 378, Q. 7). At that time, as McDonald admits, he "**didn't recall distinctly**" the things to which he now testifies (McDonald, Vol. II, X-Q. 78, p. 883). An affidavit was drawn up by Howe for McDonald's signature, which affidavit was forwarded by him to McBerty but never sworn to. *That affidavit McBerty never delivered to Mr. Howe, and it has been suppressed; at least McBerty does not now produce it* (Howe, Vol. I, Qs. 8, 9, p. 379; McBerty, Vol. II, X-Q. 11, p. 971).

Gilder also made an affidavit for Mr. Howe in 1913, in which affidavit (see Plaintiff's Exhibit 29, Vol. I, p. 449) he said:

"The only kind of welding which I remember seeing done on the machine at that time was the welding together of the ends of the stock to make the fan guard rings. [This was butt welding.] It was only occasionally, however, that I was in a position to know what kind of work was being done on the machine, so that other kinds of work and

characters of welds may have been made which I knew nothing about."

Now, under the stimulus of the effective coaching of Smith, McBerty and others, Gilder says that he remembers seeing some fan blades, which had been electrically welded on this machine, in a tray (Vol. II, p. 904). But *he did not see the process*. He did not know of his own knowledge how the blades and spiders were put together.

Such testimony as that of Craft, McDonald and Gilder, in view of their complete lack of knowledge of the subject-matter six years before the date of their testimony (and six years nearer to the time when it all was supposed to have happened), ought, we submit, to carry no weight at all.

Smith.

The other witness, Smith, is the man who was hired by the "Welding Patents Investigating Committee" in 1917 to line up witnesses and work up the evidence regarding this McBerty alleged prior use. Although Smith was living in Warren in 1913 when McBerty spent two weeks of his time taking Mr. Howe around to see all possible witnesses who could be found to support his story, McBerty never thought it worth while to take Howe to see Smith (Vol. II, p. 860, X-Q. 1046; Vol. I, p. 514, X-Qs. 262-265). He thought of Smith as a "transformer man" (p. 863, X-Q. 1100) and evidently did not expect him to know anything about the welding work.

Smith's memory has now been "refreshed" by the cut of the G-2 fan in the 1901 catalogue of the Warren Company (RDQs. 380-382, Vol. I, pp. 523, 524), which has been used to "refresh" the memory of the other witnesses and to make them believe that it represents spot welded fan blades when in fact it shows nothing of the kind.

Smith, now in his paid enthusiasm to support McBerty's story, goes a little too far, for he says that he saw E. C.

Lipps using the machine for welding the blades to the spiders of fans (X-Q. 331, Vol. I, p. 520), and he says explicitly that it was in the latter part of January or in February of 1901 that he saw him doing this, and in no other months of that year and at no other time (X-Qs. 336-338). But Lipps never went to the Warren Company factory after the welding machine was installed until after he left his job at Cleveland on April 29, 1901 (see his affidavit, Vol. I, p. 451). He does not recollect even that he ever saw the process of welding the fan blades (Q. 17, Vol. II, p. 917), much less did he ever carry on that process himself.

*Many Witnesses, Familiar with the 1901 Butt Welding
Machine, Never Heard of its Being Used for
Spot Welding.*

As against this contradictory and artificially "refreshed" recollection testimony we have the unequivocal testimony of many witnesses, employees of the Warren Company at the period in question, to the effect that they never knew of this machine being used for anything but butt welding. This is the testimony of L. C. Brewer, the regular operator on the machine from the time it was put in and for four years thereafter (Vol. I, p. 270, Qs. 15, 16; p. 274 Q. 52); of C. R. Brewer, who was employed in the fan department at the time and saw the machine every day (Vol. I, p. 285, Qs. 14-16; p. 286, Q. 24); of C. J. Wolfe, who helped make the welding machine and whose job it was to assemble the fan motors (Vol. I, pp. 309, 319, Qs. 8-11; p. 311, Q. 18); of George I. Spade, who was an assembler in the fan department and frequently saw the machine (Vol. I, p. 314, Qs. 12-16; p. 315, Qs. 24, 25); and of L. L. Little, who assisted in making the machine and getting it going (Vol. I, p. 311, Qs. 8-10; p. 280, Qs. 17-19). There are also the affidavits to the same effect obtained by Mr. Howe

with McBerty's knowledge and assistance, of the following: Robert J. Meenely, whose work was to make the fan guards that were welded on this machine (Vol. I, pp. 465, 466); Walter T. Wakefield, who was in charge of the japanning department which japanned these fans (Vol. I, pp. 468, 469); David R. Estabrook, now superintendent of the Peerless Company (Vol. I, pp. 469, 470); Robert W. Bean, the machinist who assisted in making the copper jaws for this welding machine (Vol. I, pp. 470, 471); Alfred C. Ulp, who sometimes assisted in butt welding on the machine (Vol. I, p. 474); and Alton J. Lewis, a machinist then and ever since in the employ of the Warren Company and its successors (Vol. I, pp. 476, 477).

None of these affiants ever saw or knew about spot welding in the factory of the Warren Company, certainly not in 1901, although they were employed there and some of them at least would have known of the matter if there were any real foundation for McBerty's story

No One Claims to Have Actually Seen McBerty Weld the "Trayful" of Fan Blades and Spiders.

Even Smith, who was hired by the Welding Patents Investigating Committee to work up this McBerty defense, carefully avoids stating that he saw McBerty actually welding four blades to a spider. He says he saw at least a dozen, perhaps more, "completed fans" "so welded" (Vol. II, p. 496, Q. 47). Completed fans are those which were ready for the market and therefore had been japanned or black enameled. The black enameling on the faces of the blade would conceal the heads of countersunk rivets, which might have been employed to give a smooth finish to the faces of the blades.

Craft did not see McBerty do any spot welding (Vol. II, p. 780, X-Q. 87). He only saw the front of the blades

after they were japanned (p. 790 X-Q. 228-229). So that if the rivet heads were countersunk and then japanned he would not have seen the rivets (X-Q. 230-232). It is merely an "inference" on his part that the fans were spot welded (X-Q. 233).

Powers, who "installed a piece of fiber insulation the full length of the machine which is different from the one now in place" (Vol. II, p. 874, Q. 18), only saw what he calls "experimental work" on transformer iron and fan blade stock (Q. 35-38). He did not "see any complete fan blades with the spiders" (Q. 39).

McDonald (whose testimony, as we have shown, is completely discredited by his non-recollection when seen by Howe and McBerty in 1913; *supra*, p. 191), now, after evident coaching by McBerty, states that he saw McBerty weld four blades to *one* spider (Vol. II, p. 881, Q. 37-39). No one else ever claims to have seen as much as that.

Gilder never saw anyone do any spot welding on the machine (Vol. II, p. 904, Q. 40).

Lipps doesn't recollect of seeing the fan blades themselves welded (Vol. II, p. 917, Q. 17).

Bettiker (Vol. II, p. 978) does not state that he saw any spot welding done.

The essential part of McBerty's story, therefore, namely, the fact that he spot welded a dozen or fifteen fan spiders to their blades, and that these spot welded structures went into complete fans that were sold, lacks even nominal corroboration from any witness.

Nevertheless some of these witnesses, — whose honesty we have no desire to question, — do claim to have seen in 1901 one or more fans with spot welded spiders and blades which McBerty told them he had produced. Their testimony cannot be true, for as we have shown above, it was, for a number of irrefutable reasons, impossible for McBerty to have spot welded these structures in 1901

when he says he did. How, then, is this testimony to be explained? We respectfully submit that there is no burden upon us to explain this matter; the failure of the McBerty defense is clear; but we venture to suggest a possible explanation.

The Possible Actual Facts in the Matter.

There is no doubt that McBerty set up in the Warren Company factory early in 1901 a welding machine having some of the parts of the machine in evidence as Exhibit B, and that this machine was subsequently used for the purpose of butt welding the ends of the fan guard rings for the new G type fans. The machine was not, however, in its present condition. As we have shown above, it had no space for welding a fan spider and blades, and the maximum potential which the transformer would deliver was only one volt, which was insufficient to do spot welding, and hardly sufficient for butt welding.

McBerty may have done some experimenting with this machine. Craft testifies:—

“We did do almost all sorts of experimenting on that machine. We tried most everything.” (X-Q. 184, Vol. II, p. 787.)

And it is possible that in the course of that experimenting McBerty tried to see what would happen if he interposed two thin sheets of steel between the ends of two copper wires placed in the clamps of the machine. It is not worth while for us to question the authenticity of Lipp’s Exhibit H (the only exhibit in the case purporting to represent McBerty’s 1901 work which is vouched for by anyone except McBerty himself). This Exhibit H is a mere “stick” showing on its face that sufficient current was not used to do real spot welding. Exhibit H is made of a pair of pieces of armature laminations, but it may even

be that McBerty also tried the operation with similar results on pieces of fan blades lying above the plant. *That was all that he did or could have done in any way relating to spot welding on this machine.* Even this much is not proved. Such experimenting which McBerty may have done may furnish the ground-work upon which the testimony of the other witnesses is based, and from which, by skilful coaching, has been developed, after 18 years lapse of time, the present greatly enlarged story. There is nothing surprising about this growth of the story. It is because of their recognition of the fact that such stories do grow in this way, that the courts have laid down the salutary rule requiring that an anticipation of this sort should be proved "beyond a reasonable doubt" and that something more than memory evidence is necessary to prove such an alleged prior use (authorities, *infra*, p. 200).

We have seen that no witness claims actually to have seen McBerty spot weld the blades to the spiders of his trayful of fan blades and spiders. But a few of them do claim to have seen completed fans that had been spot welded. This erroneous impression on the part of these witnesses, if it has any basis whatever, may well have been due to the fact that in some of the Warren Company's fans the heads of the rivets were *countersunk* in order to provide a flat surface for the japanning in which case the rivet heads would not show. Thus Brewer testifies (Vol. I, p. 287, Q. 32) that in some of the fans at some time "the blades were countersunk and a flush rivet was inserted and the head was riveted on the back of the spider". When the blades of these fans were japanned, as they were in the G type fans, they would look as spot welded blades now look, because no rivet heads were to be seen.

*The Testimony of Defendant's Witnesses was Falsely
"Refreshed" by Showing them the Misleading Catalogue
Cut and the Reconstructed Exhibit B.*

The testimony of the defendant's witnesses shows very clearly how their recollections were falsely stimulated by the misleading interpretation of the cut of the G-2 fan in the 1901 catalogue of the Warren Company, used by Mr. McBerty to embellish his story of spot welding.

McBerty apparently had sufficient recollection of the 1913 affidavits collected by himself and Howe to know that Lipps and Brown, the men on whom he relied in 1913 to corroborate his statements, had stated in their affidavits that there was never any actual practical or commercial use of McBerty's 1901 spot welding and he therefore ignored them and sought first his friend, William E. Smith, whose affidavit had not been taken by Mr. Howe, although Smith was living in Warren in 1913, when Howe was there and was readily available to give an affidavit had he known anything about the 1901 alleged spot welding.

Armed with the photograph, superficially authentic, of the G-2 alleged spot-welded fan in the 1901 catalogue, and with the welding device of Exhibit B rearranged so as to protrude sufficiently from the edge of the bench to permit the insertion of a fan spider and four blades, and connected to a modern transformer capable of providing a current adequate for spot welding, McBerty in 1917 could easily make a demonstration to Smith of spot welding of the kind which he desired Smith to remember as having been done in 1901. Smith could be induced to swallow the story, hook, bait and sinker, since his own recollection of the actual facts had been dimmed by the lapse of sixteen years, and since it was to his interest, as the paid investigator for the Welding Patents Investigating Committee,

to remember the facts as McBerty told them. Smith then set out to hunt up witnesses and to persuade them also of the truth of the story. He, of course, took with him the same cut of the G-2 supposedly rivetless fan, and photographs of the McBerty remodeled machine with fan blades and spiders in welding position (such as he showed L. C. Brewer; see Plaintiff's Exhibits 38 and 39, offered Vol. I, p. 308), and undoubtedly also showed the witnesses samples of complete fan blades and spiders which he represented, on McBerty's say-so, to be exactly like the work said to have been done in 1901.

It is therefore not surprising that out of the many ordinary workmen who were employed by the Warren Electric & Specialty Company in 1901, and who saw the machine butt welding, and perhaps used, as Craft says, in experimenting in other ways (possibly even in an attempt to "stick" with electrodes), there could be found some whose recollections were sufficiently obliterated by time so as to be capable of receiving a fresh impression from the plausible story of McBerty and Smith, backed by plausibly presented photographs of an alleged actual spot welded fan, and who would therefore adopt the story told by McBerty and Smith.

When such men had once been persuaded to accept McBerty's story of actual practical spot welding for commercial fans in 1901, all the rest of the details followed as a matter of course and the minds of these witnesses naturally imported into the supposed operations of 1901 their knowledge of spot welding which had been acquired in later years.

The Court will notice, when it reads the testimony of the defendant's witnesses, how unduly cognizant they are of the eighteen year old "facts" concerning which they had been coached and concerning which their recollection had been refreshed by McBerty's false story and misleading

catalogue, photographs and specimens, but how very inaccurate and deficient were their recollections about any other facts on which they had not been thus coached and refreshed. For example, Craft testified that he gave McBerty an affidavit in 1913, when it was in fact in 1917 (X-Q. 121, Vol. II, p. 782; X-Q. 261, p. 794), and he could not recollect "whether it was before or after the war" that he talked with Mr. Pattison (X-Q. 107, p. 781).

The fact of the matter is that the testimony of the witnesses other than McBerty is based merely on McBerty's story and on his worked up evidence and his misleading photographs and exhibits.

The substance of this McBerty prior use defense is now built on the supposed showing of the cut of the G-2 fan in the 1901 catalogue of the Warren Electric & Specialty Company first discovered in 1917.

With the sweeping away of this basis for the McBerty defense goes its entire substance.

**PRIOR USE MUST BE PROVED BEYOND A REASONABLE
DOUBT BY CONTEMPORANEOUS CONCRETE
EVIDENCE.**

The law of prior use and the attitude of the courts toward attempts to invalidate a meritorious patent by such testimony as is set before the court by the defendant in this case is presented completely and conclusively in the recent case of *Eibel Co. v. Paper Co.*, 261 U. S. 45, in which this Court rejected as "incredible" (p. 60) the testimony of alleged prior uses. This Court said (p. 60):—

"It is true that some witnesses testify that they realized before Eibel's application that speeding up the stock to equal velocity with the wire would solve the difficulty and aid the speed. But there is not a single written record, letter or specification of prior date to Eibel's application that discloses any such discovery by anyone, or the use of the pitch of the

wire to aid the speed of the machine. The oral evidence on this point falls far short of being enough to overcome the presumption of novelty from the granting of the patent. The temptation to remember in such cases and the ease with which honest witnesses can convince themselves after many years of having had a conception at the basis of a valuable patent, are well known in this branch of law, and have properly led to a rule that evidence to prove prior discovery must be clear and satisfactory. *Barbed Wire Patent Case*, 143 U. S. 275, 284; *Loom Co. v. Higgins*, 105 U. S. 580, 591."

In the *Barbed Wire Case* there were a number of prior uses set up, the principal one of which was the exhibition of a panel of a barbed wire fence at a county fair by one Morley. Some twenty-four witnesses were produced on behalf of the defendant who testified to the existence of this fence. The court held that the prior use had not been sufficiently proved, saying:—

"We have now to deal with certain unpatented devices claimed to be complete anticipations of this patent, the existence and use of which are proved only by oral testimony. In view of the unsatisfactory character of such testimony, arising from the forgetfulness, of witnesses, their liability to mistakes, their proneness to recollect things as the party calling them would have them recollect them, aside from the temptation to actual perjury, courts have not only imposed upon defendants the burden of proving such devices, but of declaring that the proof shall be clear, satisfactory and beyond a reasonable doubt. Witnesses whose memories are prodded by the eagerness of interested parties to elicit testimony favorable to themselves, are not usually to be depended upon for accurate information. The very fact which

courts, as well as the public, have not failed to recognize that almost every important patent, from the cotton-gin of Whitney to the one under consideration, has been attacked by the testimony of witnesses who imagined they had made similar discoveries long before the patentee had claimed to have invented his device, has tended to throw a certain amount of discredit upon all that class of evidence, and to demand that it be subjected to the closest scrutiny. Indeed, the frequency with which testimony is tortured or fabricated outright to build up a defence of the prior use of the thing patented, goes far to justify the popular impression that the inventor may be treated as the lawful prey of the infringer. The doctrine was laid down by this Court in *Coffin v. Ogden* (18 Wall. 120), that 'the burden of proof rests upon him', — the defendant, — 'and every reasonable doubt should be resolved against him. If the thing were embryotic or inchoate; if it rested in speculation or experiment; if the process pursued for its development had failed to reach the point of consummation, it cannot avail to defeat a patent founded upon a discovery or invention which was completed, while in the other case there was only progress, however near that progress may have approximated to the end in view'. . . . Fourth: *If any experiments were made by Morley in this direction, they were evidently looked upon by him and by the public as of no practical value, and were subsequently abandoned and the fences lost. . . .* There was, evidently, prior to Glidden's application more or less experimenting in a rude way in and about Delaware County upon the subject of barbed wire as applied to wire fences. . . . *It is possible that some one of these experimenters may have, in crude way, hit upon the exact device patented by*

Glidden, although we are not satisfied from this testimony whether or by whom it was done."

"It is quite evident, too, that all, or nearly all, of these experiments were subsequently abandoned."

In *Deering v. Winona Harvester Company*, 155 U. S. 286, the testimony was that a certain pivoted extension for a grain binder, which was produced as an exhibit, was used to cut part of 250 acres and was subsequently abandoned for other reasons than any defect in the device. The use was testified to in considerable detail by the alleged prior user, and there were other witnesses. The court held that the proof was not sufficient, saying (p. 300):—

"As we have had occasion before to observe, *oral testimony, unsupported by patents or exhibits, tending to show prior use of a device regularly patented is, in the nature of the case, open to grave suspicion.* The *Barbed Wire Patent*, 143 U.S. 275. Granting the witnesses to be of the highest character, and never so conscientious in their desire to tell only the truth, the possibility of their being mistaken as to the exact device used, which, though bearing a general resemblance to the one patented, may differ from it in the very particular which makes it patentable, are such as to render oral testimony peculiarly untrustworthy; particularly so if the testimony be taken after the lapse of years from the time the alleged anticipating device was used. If there be added to this a personal bias, or an incentive to color the testimony in the interest of the party calling the witness, to say nothing of downright perjury, its value is, of course, still more seriously impaired. This case is an apt illustration of the wisdom of the rule requiring such anticipations to be proven by evidence so cogent as to leave no reasonable doubt in the mind of the court, that the transac-

tion occurred substantially as stated. . . . If he ever used a pivoted device at all — of which we have considerable doubt — *his efforts in that direction must be relegated to the class of unsuccessful and abandoned experiments which, as we have repeatedly held, do not affect the validity of a subsequent patent.* *Corn Planter Patent*, 23 Wall. 181, 211. *Coffin v. Ogden*, 18 Wall. 120, 124."

In *Emerson & Norris Co. v. Simpson Bros. Corporation*, 202 Fed. Rep. 747 (C. C. A. 1st), the defendant sought to prove prior use by a number of very respectable witnesses whose evidence was supported by letters and a diary. The evidence was sufficiently strong to persuade the lower court that the prior use had been proved beyond a reasonable doubt. The upper court, however, considered that it was not sufficient, saying (p. 749):—

"This case (*Brooks v. Sacks*, 81 Fed. 403), however, developed the underlying rule that ordinarily, in cases like the present, *it is necessary that the anticipations should be supported, not merely by the testimony of one or numerous witnesses relating to matters many years previous, but by concrete, visible, contemporaneous proofs which speak for themselves.* . . .

"*The result of all these cases is that, with reference to questions of the class which we have here, namely, the identity of structure as between what is patented and what is alleged to have anticipated it, something more than oral testimony, even of the highest character, is required where there has been a considerable lapse of time.*"

The attitude of the courts towards such evidence as that of McBerty and his witnesses has been stated many times. In *Wood v. Cleveland Rolling Mill Company*, 4 Fish.

P. C. pp. 550, 559, the court (Swayne and Sherman, JJ.) says:—

“The confidence of the attacking witnesses is often in proportion to the distance in time that one is removed from the other. Their imagination is wrought upon by influences to which their ears are subjected, and beguiles their memory.”

This general proposition fits the facts of the case at bar. In the recent case of *Nicholas Power Co. v. C. R. Baird Co.*, 222 Fed. Rep. 933, Judge Mayer states very well the test which should be applied to the McBerty defense:—

“This case has given me some practical realization what a jury contends with when the court charges the doctrine of reasonable doubt in a criminal case, and after much consideration and a good deal of debate with myself I can only say that I am not convinced beyond a reasonable doubt. In other words, if, sitting as a juror, I were charged that, if I believed that it was proved beyond a reasonable doubt that Wooden had used the valve at the time in question, then he was guilty, I would bring in a verdict of not guilty; and if, *per contra*, I were similarly charged that, if Wooden had not used the valve at the time in question he was guilty, I should likewise bring in a verdict of not guilty — and both results would be because I entertained a reasonable doubt.

“But there is something besides the question of reasonable doubt upon this branch of the case. I think that even if Wooden’s recollection is right, the testimony shows that the valve and the machine with which it was made *were experimental and afterwards abandoned*. Wooden evidently had no appreciation of what the valve accomplished, and, instead of giving something to the world, he consigned the structure

literally to the junk heap, where doubtless it would have still remained, had this litigation not occurred.

"In what has been observed supra I am to be understood as not reflecting in the slightest upon the uprightness of Wooden. He looks and acts like an honest and truthful man, but experience in the court room teaches that honest men, after much thought and talk about just such an incident as this, sometimes become confused as to dates, and reiteration in conversations is often transmuted into a recollection honestly believed in, but inaccurate in point of fact."

In *Thayer v. Hart*, 20 Fed. 693, Coxe, J., said:—

"It is so easy to fabricate or color evidence of prior invention and so difficult to contradict it, that proof has been required which does not admit of reasonable doubt."

". . . The evidence of prior invention is usually entirely within the control of the party asserting it, and so wide is the opportunity for deception, artifice or mistake, that the authorities are almost unanimous in holding that it must be established by proof clear, positive and unequivocal; nothing must be left to speculation or conjecture."

EVEN IF McBERTY'S STORY WERE TO BE ACCEPTED AS TRUE IN TOTO, IT AMOUNTS ONLY TO AN ABANDONED EXPERIMENT, INSUFFICIENT TO ANTICIPATE A PATENT.

Having now established, as we believe, that McBerty's story is not and cannot be true, and that all McBerty ever did in 1901 (it is doubtful if he did even this) was at most to make a few unsuccessful experiments, resulting in only such abortive samples as the Lipps Exhibit H, we return to the proposition with which we began our discussion of this defense, namely, that even if the story is true in

substance and in detail, still the defense must fail for the reason that at best all that McBerty did amounted only to an abandoned experiment. The most that McBerty claims to have done was to make a trayful of spot welded fan spiders and blades—about a dozen. This work was done inside of a week, he says, and might have been done in an hour's time unless the machine overheated (Vol. II, p. 821, X-Q. 445; p. 822, X-Qs. 456-459). The experiment was admittedly abandoned and no more fans of the kind were ever manufactured after February, 1901. Thereafter the machine was used only for its regular intended purpose, butt welding the ends of guard rings.

Even defendant's own witnesses characterize the operations as purely experimental. Thus Craft testifies (Vol. II, p. 787):—

“X-Q. 185. Do you regard this matter of welding blades to spiders by spot welds as experimenting or not?

A. Yes, **most distinctly experimenting.**”

Similarly Lipps says that the fans alleged to have been spot welded “were not going through the commercial part of it”, but the thing was “**just experimental**” (X-Qs. 83-85, Vol. II, p. 923). And Powers also says:—

“All of the spot welding that I can recall was **experimental or development work.**” (Q. 35, Vol. II, p. 875.)

Similarly Brown in his affidavit, prepared by Mr. Howe in collaboration with McBerty himself, says:—

“This spot welding was not done on any commercial product of the company, for as I understood it there was no commercial product of the company to which it was adapted as a commercial proposition.” (Vol. I, p. 482.)

Indeed, McBerty in his letter to his own counsel, Mr. McGill, when he first presented the matter to him, classifies his work merely as "experimenting", saying:—

"I have also samples of spot welding which was done on the welder at the time we did **this experimenting.**" (See his letter under date of January 2, 1912 [error for January 2, 1913], Vol. II, p. 945.)

This was written after Mr. McGill had expressly warned him in his letter of December 10, 1912 (Vol. II, p. 951), that "if the machine was constructed and used in an experimental way and then abandoned, it will not be available as a defense".

Indeed, *the affidavits and testimony of McBerty and his other witnesses are in considerable part devoted to showing why it was that the matter never got beyond the experimental stage and was abandoned instead of being adopted commercially.*

Under these circumstances, what McBerty did, even if we were to accept his whole story as true, falls clearly within the authorities which hold that abandoned experiments do not anticipate a patent. It was a mere experimental trial of the process and even if it happened that some few articles produced in the experimenting were sold, the use of the process was none the less mere experimentation, shortly abandoned. We cite a few of the many authorities on this point.

In *The Corn Planter Patent*, 23 Wall. 181, 211, a machine was used for planting five acres of corn, "but the machine was never used again, and was afterwards broken up and no other was ever made". The court held that there was no anticipation, on the ground that the alleged prior invention was a mere abandoned experiment.

In *Smith v. Goodyear Dental Vulcanite Co.*, 93 U. S. 486, 498, the Supreme Court held of certain experiments and

manufacture which closely resembled the patented process:—

“The experiments resulted in nothing practical. . . . In consequence of these and other objections *the manufacture* was soon abandoned, and it may properly be considered an abandoned experiment.”

In *Warren Bros. Co. v. City of Owosso*, 166 Fed. 309 (C. C. A. 6th), the suit was on the Warren bitulithic pavement patent, filed 1901 and granted 1903. The principal defense was a sidewalk laid by the Asphalt Street Paving Company (the real defendant) before its office in 1897. The court did not decide whether or not this sidewalk had the same structure as the patented pavement, simply stating (p. 315) that if defendant's evidence is to be believed it had the structure claimed in the Warren patent. The sidewalk was held not to anticipate since it was a mere experiment, saying (p. 315):—

“That somebody had, in fact, made the same composition before he did does not necessarily defeat his patent. In one sense, he would not be the first inventor in such case. But, in the sense of the patent statute, he is the first inventor who by his own thought, makes an article or material and first perfects and adapts his discovery to actual use, *although someone may have previously made a similar article without putting it to practical use or giving his discovery to the public in any way.*” . . .

“The presumption is strong that the experiment was not regarded as successful in teaching anything of value to the pavement art, for it was never repeated, and no sidewalks were ever put down of that character, although that kind of work was a part of their business. It was an experiment when the pavement was laid, and continued to be such until the

result could be proved. The subsequent continued use of their old sand and asphalt mixture, both for sidewalks and street purposes, for nearly six years and down to the infringement here complained of, is conduct plainly indicating that they had abandoned their efforts to find a better composition and treated the experiments of Upham in 1896 as unsuccessful.

In *Gamewell Fire-Alarm Telegraph Co. v. Municipal Signal Co.*, 61 Fed. 948, 952 (C. C. A. 1st Cir.), the court held that the Noyes patent was not anticipated by the Wood device, which had been embodied in a model and described in an application for a patent, saying:—

“The only use ever made of it by Wood was merely experimental. It was never used for any practical purpose.”

In *Hoyt v. Slocum*, 26 Fed. 329, 330, it was claimed that the prior use of two Harvey bottle-washing machines anticipated the patent in suit. One of these machines “was only used for a limited period by the person who invented it, and whose business made it necessary for him to wash bottles, and was then abandoned”. The other machine was used “at times during several months”, and was abandoned “principally because it ran so hard”. Judge Colt held that there was no anticipation, saying:—

“Both these Harvey machines were thrown aside after a short time, and they may fairly be considered as abandoned experiments; at least the priority of the Harvey machine has not been proved with the clearness and certainty which are necessary.”

In *Mast, Foos & Co. et al. v. Iowa Windmill & Pump Co.*, 68 Fed. 213, 223, the patent was for a pump, and it was claimed to have been anticipated by a single pump that was actually made and used in a well years before the

invention was made by the patentee. The court (Shiras, J.) said:—

“It is well settled that to sustain the defense of prior invention or use, the evidence must be clear, satisfactory, and such as to leave no reasonable doubt as to the material facts. Furthermore, when it appears that several parties have been independently engaged in experiments upon the same invention or device, the one who succeeds in first giving it a practical form, who brings it to public knowledge by obtaining a patent therefor, and makes it of general use and value by manufacturing and causing to be manufactured machines or articles embracing the invention, will be protected in the rights secured by his patent, even though it be shown that another may have mentally conceived the invention at an earlier day, *or even if, in addition to the mental conception, he may have embodied it in a successful experimental form and then abandoned it.* The benefits and protection of the patent law are not for those who indulge in speculations and experiments only, but are intended to protect those who make available to the public novel and useful inventions by following up the original conception, carrying it through the experimental stage, and so far perfecting it as to furnish to the public a practical means of utilizing the novelty sought to be patented. *Barbed Wire Patent*, 143 U. S. 275, 292, 12 Sup. Ct. 443, 450; *Coffin v. Ogden*, 18 Wall. 120; *Cantrell v. Wallick*, 117 U. S. 689, 6 Sup. Ct. 970; *Deering v. Harvester Works*, 155 U. S. 287 15 Sup. Ct. 118. It may, therefore, be admitted that the evidence shows that Johnson was experimenting in the same direction pursued by Martin, and that his efforts in this line antedated those of Martin; but it is no less clear that if the public knew no more of the

invention than was communicated to it by the making and use of the Felger pumps, in 1883 and 1884, it would be in entire ignorance of the improvement. *The experiment was made and then abandoned; that is to say, it was not made the basis of an application for a patent, nor was the manufacture and sale of pumps embracing the invention entered upon.* I do not, therefore, deem it necessary to consider in detail the evidence upon the question of the actual date of the making of the Felger pumps, as it must be held that they do not defeat the Martin patent, even if made before the date thereof."

In *Standard Sanitary Mfg. Co. v. J. L. Mott Iron Works*, 152 Fed. 635 (affirmed 129 Fed. 135, C. C. A. 3d Cir.), Judge Cross said (p. 638):—

"The defendant, however, alleges that the patent is invalid because of the prior use of an unpatented pneumatic device of a like character to accomplish the same purpose. In support of this contention considerable evidence has been produced, from which it appears that a few bath tubs were enameled with some degree of success by the defendant in the fall of 1896 by a device in some respects similar to that defined in the complainant's patent; but I think that the evidence, considered as a whole, discloses nothing more than an abandoned experiment. The device — there was but one — was in operation, so that workmen who used it say, off and on for about a week or ten days, although one or two other witnesses intimate that it was used for a somewhat larger period. It was then unquestionably dismantled, and was not again used; nor was anything like it used for several years afterwards, and not until after the defendant had removed its works from Mott Haven, N. Y., to

Trenton, N. J. . . . It certainly was used but a very short time, and was then abandoned."

The defense was therefore held insufficient.

SUMMARY AS TO McBERTY DEFENSE.

McBerty had a butt welding machine in 1901 and on it he possibly may have done some unsuccessful and fruitless experimenting, resulting in such abortive products as the Lipps Exhibit H, which fell very far short of any tangible or usable result. We deny that even this much is proved.

In 1913, confronted by a charge of infringement of the Harmatta patent, McBerty seized upon his 1901 abandoned experiments as a club with which to force a "settlement" with the Thomson Company. He, therefore, worked up affidavits in conjunction with his counsel, Mr. McGill, approached the Thomson Company with them, and made a proposition to sell his evidence to them for suppression.

Honest men do not make such propositions.

When this proposition was rejected, McBerty communicated his story to the counsel who were defending the Barney & Berry case and spent weeks of his time aiding them in collecting evidence and affidavits, giving them every possible assistance in the effort to build up a successful defense. When these affidavits were all collected and considered, McBerty's story was rejected by these counsel — among the most capable, successful and reputable firms at the bar — as being not true, and if true, as only amounting to the attempted resurrection of an abandoned experiment.

McBerty then took a license under the Harmatta patent for his company, in which the validity of the patent was recognized.

Then in 1917 the "Welding Patents' Investigating Com-

mittee" appeared on the scene, saw McBerty and in cooperation with him took steps to revive the discredited defense.

His growing legal experience had now taught McBerty that his story as previously told had at least two fatal defects — (1) lack of commercial use of the process — and (2) lack of record date evidence. So, now, the story experienced a prodigious growth.

The cut of the G-2 fan in the Warren Company's 1901 catalogue was found and seized upon as plausible "record evidence" in support of a proposition never before advanced or hinted at by McBerty to his own counsel or to the counsel for the Barney & Berry Company, namely that a dozen or fifteen fans with spot welded spiders and blades had gone into the commercial output of the Warren Company. This catalogue cut is really the whole basis upon which this "trayful of fans" addition has been built.

But it is now shown by defendant's own witnesses that the catalogue was published months before February, 1901, when McBerty claims to have done this spot welding, and even months before the butt welding machine on which he claims to have done the work was set up. Moreover the cut shows not a rivetless, but a riveted fan.

Further to support the story, McBerty now (in 1917) reconstructed his old 1901 spot welder, parts of which he had found in the junk room of the Peerless Company, and remounted it in such a manner that fan blades and sheet steel spiders could be inserted within it — which had been impossible as it was mounted in 1901 — and put on a new transformer capable of giving sufficient current for spot welding, which the 1901 transformer could not do — and proceeded to make some samples of spot welded work on this reorganized machine.

Forthwith there appeared at the same time, 1917, something which had been utterly lacking at the time

when the facts were so fully investigated in 1913 by McBerty's counsel and by Mr. Howe, namely a dated specimen, — McBerty's Exhibit M, — which is clearly shown, we submit, to be spurious.

This misleading catalogue cut, this remodelled machine and these recent specimens of spot welded work were diligently shown by McBerty and the defendant's witness and paid agent, Smith, to many persons who in 1913 when interviewed by Howe and McBerty had failed to remember any spot welding, and by this means and by dint of persistent coaching, some few of these persons were induced to come forward with testimony wholly inconsistent with their 1913 affidavits and to say what they may or may not have come now to believe, that they remember seeing spot welded fan blades in the year 1901. But no one of them goes so far as to say that he ever actually saw McBerty or anyone else doing the work of spot welding the dozen or fifteen fan blades and spiders which McBerty tells about; and many witnesses who were in a position to know what was done on the 1901 machine could not be so persuaded; they testify that they never knew of this machine being used for any purposes other than butt welding.

No fan with spot welded blades is produced, and absolutely the only alleged contemporaneous specimen of the McBerty work testified to by any other witness than McBerty himself is the Lipps Exhibit H, which is not spot welded at all, but a mere unsuccessful "stick". This exhibit, put in evidence not by defendant but by plaintiff, by itself, if valid, alone goes a long way to prove that McBerty never did any real spot welding in 1901, for naturally Lipps would have preserved as good a sample as he could have found of McBerty's work.

There is then no record evidence whatever, "no contemporaneous concrete evidence that speaks for itself" of any kind, but only the discredited word of McBerty him-

self, and the inconclusive and contradictory oral evidence, eighteen years after the event, of a few witnesses coached by spurious and misleading exhibits and contradicted by their own 1913 statements.

But the story cannot be true. It breaks down when its details are analyzed. As we have shown there are at least three positive reasons why McBerty cannot have done what he claims to have done in 1901; namely (1) that the machine as it was in 1901 had not sufficient space to accommodate fan blades and spiders; (2) that it had not a transformer capable of supplying adequate current for spot welding and (3) that the spiders used on the G-type fans were not steel but brass.

The McBerty story does not fail merely for lack of proof but because it is positively disproved.

And, finally, if it were all true throughout, trayful of fans addition and all, it would still be no defense, because, even so, it would clearly fall within the category of abandoned experiments which do not militate against the validity of an issued patent.

**EVENTS OCCURRING AFTER DECEMBER 3, 1903, CAN-
NOT AFFECT THE VALIDITY OF HARMATTA'S
PATENT.**

The application for the Harmatta patent in suit was filed December 3, 1903, at which time Harmatta's rights to his invention became fixed and nothing occurring thereafter can affect the novelty or standing of that invention in the art.

Consequently the proofs offered by the defendant as to any spot welding done subsequent to December 3, 1903, are immaterial to the issues of this case, which relate only to the novelty and patentability of Harmatta's invention at that date.

It is immaterial that William E. Smith in 1905 may have

built a welding machine (long since scrapped) for butt welding at the works of the Carnegie Company, however much that machine might have resembled the McBerty welder (Smith, Q. 133, Vol. I, p. 504; McElray, Vol. II, p. 910), and it is likewise immaterial if at some later date the machine was altered over to do spot welding (McElray, Q. 21, p. 911).

It is also immaterial if Taylor, another of defendant's witnesses, made a roller welder for the Winfield Company in 1904 (Q. 56, Vol. II, p. 897), which he later used for spot welding (Q. 45), or if the Winfield Company later built a butt welder (Q. 64) and later a spot welder (Q. 68). Taylor's testimony, taken at its face value, simply shows that he invented spot welding at a later date than Harmatta. Taylor's statement that in 1903 he saw spot welding at the factory of the Peerless Company, the successor of the Warren Company (Q. 16, Vol. II, p. 893), is not to be credited, for both McBerty and Smith admitted and indeed stated most emphatically that no spot welding was done at that factory after the year 1901 (Vol. II, pp. 830, 831, and Vol. I, p. 520).

Whether spot welding was first developed in the United States from knowledge derived from Harmatta or from knowledge derived from some later inventor is not of prime importance. Harmatta's rights were fixed by the filing of his application December 3, 1903.

The fact is, however, that spot welding was first introduced commercially into the United States directly through Harmatta and the Eisenhutte Silesia Company, the owner of Harmatta's rights, at the works of the National Enameling & Stamping Company of Baltimore, Md., in 1904 (*supra*, page 14). Since then the National Company has built and used between eighty and one hundred spot welding machines (Herring, Q. 18, Vol. I, p. 132). The enormous amount of kitchen-ware made by

that company in which the sheet metal parts were united by Harmatta's spot welding of course carried the knowledge of this new art all over the United States.

With this extensive commercial use of spot welding in the United States, directly developed from Harmatta's invention, so fully proved, any basis for any argument that the defendant may make to the effect that the commercial use of spot welding did not originate with Harmatta, is entirely swept away.

It was not until two or three years later, that is in 1906 or 1907, that the Winfield Company, confessedly the first outside of the National Enameling & Stamping Company to practice spot welding commercially, started to put spot welders on the market (Taylor, Q. 73, Vol. II, p. 898). The first of these was sold in 1908.

All these occurrences took place long after the date of the filing of Harmatta's application and are really of no direct importance in determining the standing of Harmatta's invention in this case, and would not be discussed but for defendant's arguments about them.

CHAPTER IV.

THE RELATIONS OF THE PLAINTIFF TO RIETZEL
AND TO THE RIETZEL PATENT.

The application for the Harmatta patent in suit was filed December 3, 1903. This is the Harmatta date of invention for the purposes of the case. From and after that date he had an absolute right to patent the invention disclosed in that application if it were found to be new and patentable. This he did in the patent in suit.

In prosecuting the application he complied with all the provisions of law and is in no way responsible if because of the cumbersome character of Patent Office proceedings, the record was to some extent confused or the issue of his patent was delayed.*

The Rietzel patent No. 928,701 (Vol. II, p. 1098), was applied for February 24, 1905, and issued July 20, 1909. Of course, this patent is too late to affect Harmatta's rights.

It was open to the defendant to show that Rietzel was the prior inventor. It called Rietzel as a witness. We have already shown (*supra*, p. 69) the utterly frivolous character of the definitely abandoned experiments to which Rietzel testifies as having been made by him in 1898, five years before the date of Harmatta's application and seven years before Rietzel's application for his patent. Rietzel was certainly not the prior inventor.

We submit that this is all there is to any defense based upon Rietzel or his relations to the general situation.

But the defendant in the Court below sought to develop

*We call attention to the law on this point as stated in the case of *U. S. v. American Bell Telephone Co.*, 167 U. S. 224, 248.

from the relations of the parties a defense which it seems to present as in the nature of an estoppel, not affecting in the slightest degree the facts in the case or Harmatta's clear right to the patent as far as Rietzel or his work is is concerned.

Defendant's argument seems to be that because there appeared in the Rietzel patent of 1909 certain claims which *at the suggestion of the Patent Office* were incorporated into the Harmatta application in the year 1910, which claims clearly and definitely define Harmatta's invention and as such were allowed and appear in the Harmatta patent in suit, and because Rietzel filed certain affidavits in the course of his application and certain preliminary statements in an interference with Harmatta's application which contained some general statements which Rietzel, when called as a witness, failed adequately to support, and because the plaintiff's predecessor was the owner of the Rietzel application and patent and subsequently purchased the Harmatta application in the year 1912, in some way the plaintiff is estopped from holding the defendant for its clear infringement of the Harmatta patent.

Regardless of any other consideration, it seems certain that there is no element of estoppel in the situation. Neither the plaintiff's predecessor nor Rietzel has done or said anything upon which the defendant might properly rely as justifying it in its infringement of the patent in suit. Nothing that they or either of them said or did was in fact relied upon by the plaintiff in initiating and carrying on its infringement. No injury to the defendant because of anything said or done by Rietzel or the Thomson Company is even alleged. The defendant relies only upon the fact that Rietzel during the progress of his application and in his preliminary statements made certain allegations which upon investigation he was unable to prove and upon the confusion that arose from a very difficult situation in which the old Thomson Company found

itself involved when it learned of the Harmatta invention and that it was Harmatta and not Rietzel who was entitled to certain claims in the Rietzel patent which was at that time owned by the Thomson Company. A brief statement of the history of the two applications and of the way in which the rights of the matter were worked out by the Thomson Company and the Patent Office will show how utterly without foundation is this contention of the plaintiff.

In the year 1904 Rietzel developed the specific projection welding process which he disclosed in his patent (Vol. I, p. 659, XQ. 162). This was his first real work and the earliest date upon which he can stand for any invention patented in his patent No. 928,701, for his abandoned experiments seven years before are clearly to be ignored. The welding invention which Rietzel made in 1904 was in no sense the Harmatta invention. He was, to be sure, seeking to unite by electric welding two sheets of metal, a thing which had not been done before by anyone except Harmatta, whose invention had been completed by the filing of his application December 3, 1903, but Rietzel's method was utterly unlike that of Harmatta. It is well disclosed in the Rietzel patent.

Rietzel's thought was to unite two sheets by the following method: First, as a preliminary step, he made a series of projections on one or both sheets by bending up the metal as shown in Figs. 1 and 2 of his patent or by putting metal points or projections on the face of one or both sheets as shown in Figs. 3 and 4 of his patent, or by introducing a series of metal pieces between the sheets as shown in Fig. 5 of his patent which acted like points or projections. These points or projections were to obtain "the localization of the flow of heating electric current and of welding pressure to the desired spot or spots" (Rietzel Patent, p. 1, lines 93-96).

His preferable method was "to provide projections from the meeting surfaces of both pieces that are to be united" (Patent, p. 2, lines 22-25), although his idea would be practised if he had projections on only one sheet or even if he interposed between the two plane sheets "small pieces of conducting material" which act in the same manner as projections for localizing the heating current and the pressure (Patent, p. 2, lines 26-31).

His electrodes, utterly unlike the tapered electrodes of Harmatta, the end of each of which is of the size of the spot to be welded, are shown at A, A' in each of the first five figures of the Rietzel patent and described as "conducting blocks" covering the *entire series* of spots to be welded. "These electrodes, A, A', furnish the heating current while applying the pressure, the localization of the pressure in the spots being brought about" by the points or projections or inserted pieces of conducting material (Patent, p. 2, lines 98-107).

When the current is applied it passes through these large "conducting blocks" or electrodes (from one to the other) when "the application of pressure together with the flow of heating current from one plate to the other will result in a union of the two pieces over their opposed surfaces in spots only thereon" (Patent, p. 2, lines 119-124).

It is worth while to quote two passages from the Rietzel patent. The first is page 1, line 92, to page 2, line 40, which is as follows:

"In carrying out my invention the localization of the flow of heating electric current and of welding pressure to the desired spot or spots may be brought about in any desired way. One of the preferred ways is by providing between the meeting surfaces or portions of the pieces to be united suitable conducting projections or points at the spots of union, which projections or points carrying the heating electric

current from one piece to the other are so located in the meeting surfaces and are separated from one another that on the application of the welding pressure the welded union resulting will be localized in the area of the opposed surfaces and will be substantially coextensive in area with the restricted area of the path of the effective heating current. Various ways of providing such points or projections will occur to those skilled in the art.

"The preferred method is to indent the metal from the side reverse to that on which the union is effected by a suitable tool, the projections thus formed affording points for the passage of the electric current. This method is preferable also because it permits the welding to be produced at a multiplicity of spots simultaneously through the application of pressure over the whole rear surface of the plate, the points or projections in that case serving not only to localize the flow of the heating current but also to localize the welding pressure.

"In the preferred manner of carrying out my invention in the case of sheet metal manufacture I provide projections from the meeting surfaces of both pieces that are to be united. Said projections may also be provided by interposing between the two plane sheets small pieces of conducting material which act in the same manner when the sheets are brought together, as projections which localize the heating current and the pressure. It will be understood, however, that in the latter instance as in the former, these pieces are so small and are placed such a distance apart that on the application of welding pressure there will be no running of the welds into one another but that the final union will be in spots only leaving well-defined areas on the meeting surfaces, in

which the surfaces either lie in contact or separated from one another by a very thin space."

The second is at page 3, lines 23 to 30, as follows:

"When the invention is employed in its preferred form or manner of practice in the field of sheet metal manufacture all that is necessary is to provide the contact spots or projections as already described and then to assemble the pieces in an electric welding machine and weld them together as already set forth."

As already stated, this Rietzel process is one of "butt welding". It may be described in the exact terms that would be used in describing the Thomson butt welding operation of his fundamental patents. It is utterly different at every stage from the process patented by Harmatta. In Rietzel, when the plates are put together at the beginning of the operation, they are not in contact except at the points or projections (the inserted piece of metal of Fig. 5 is in all respects the same as a projection). In Harmatta the current and pressure are localized solely by the electrodes which are pointed, the point being of the size and dimensions of the spot to be welded. In Rietzel the electrodes are "conducting blocks" which cover a substantial area of the plates within which are a series of points or projections.

But the result of the Rietzel process would be sheets welded at spots, of which Harmatta and not Rietzel was clearly the first inventor. In so far as the process was one of welding in spots, the points or projections on the plates of Rietzel were of vital consequence, as with his process the welded spots were obtained by butt welding these spots or projections. Harmatta has no points or projections but, as we have shown, works upon an utterly different principle.

It is obvious, however, that as a matter of words, phrases may be found which would apply to both processes but having a different meaning as to each. But Harmatta invented his process long before Rietzel invented his so that Harmatta was entitled not only to the claims for the product but also to any claims so vaguely drawn as to define both processes.

While Rietzel's application for point and projection welding was pending, the Patent Office on the eighth day of June, 1908 (Vol. III, p. 1760), called attention to the British patent to Harmatta No. 22,981 of 1903 accepted August 25, 1904, its effective date. This patent (Vol. II, p. 1123) describes among other things the precise electrode spot-welding process of the United States Harmatta patent in suit. It states (p. 1128):—

"If now, for example, two overlapping sheet metal ends to be welded be introduced between the electrodes *a, b*, and the latter pressed towards one another and current allowed to flow, then a small round and clean welding point is obtained which fully takes the place of a rivet."

The Patent Office said (Vol. III, p. 1760):—

"Fig. 4 of this [the British] patent shows a spot weld, which takes the place of a rivet."

Thereupon Rietzel's solicitors, properly anxious to get as broad claims as possible for their client, redrafted Rietzel's specification and claims to cover broadly the idea of making a weld which would take the place of a rivet between two sheets of metal by localizing the current and the pressure at the spot to be welded, however it was done. (Vol. III, pp. 1762-1775).

Their theory undoubtedly was that the finished spot welds produced by the two processes were practically the

same and that claims might be drawn on Rietzel's utterly different process which would cover the Harmatta process.

In making these substantial amendments to the Rietzel application, Rietzel's solicitors clearly had in mind the fact that Rietzel had actually reduced his projection welding invention to practice in June 1904, for they filed simultaneously an affidavit for Rietzel to that effect (Vol. III, p. 1778). This date, of course, was prior to August 25, 1904, the effective date of the Harmatta British patent, the only Harmatta patent to which their attention had been called.

The Patent Office then cited the French patents to Egel (Egel was patenting the Harmatta invention; under French law the inventor himself need not file the application) No. 336,187 and 335,889 (Vol. III, p. 1788). No. 336,187 (Vol. II, p. 1144) is substantially the same as the original specification of the application for Harmatta's United States patent. It was published March 1, 1904. No. 335,889 was published February 18, 1904 (Vol. II, p. 1132). These dates were back of June, 1904.

Thereupon Rietzel's solicitors, undoubtedly informed by Rietzel that he had done something on the line of his invention at an earlier date, filed an affidavit that he had made spot welds by the use of a "pointed electrode" before "*February 18, 1904*", the date of the French patent No. 335,889 (Vol. III, p. 1792).

Both these affidavits were the customary and usual affidavits provided for by Rule 75 of the Patent Office.

It may well be contended that Rietzel's solicitors should have investigated Rietzel's story at this time. If they had done so they would have found that his futile and fruitless abandoned work prior to February 18, 1904, which amounted only to an abandoned experiment, was not adequate to carry back his date. But Rietzel's memory of what he had done in 1898, so many years before the

affidavits were filed in the year 1909, may easily have deceived him into the belief that he had then done something material, although when he came to investigate the subject later, he found that such was not the case.

In any event we respectfully submit that there is nothing in the situation to cast the slightest cloud on the Harmatta patent or the plaintiff's right to enforce the same.

The Rietzel patent finally issued July 20, 1909.

The patent was clearly invalid in view of Harmatta's earlier invention both as to the claims of the product and also as to the broad claims inserted by Rietzel in his application in view of Harmatta, if the same should be construed, as they might be according to their terms, as covering more than the production of projection or point welding which alone Rietzel had invented, for Harmatta had a fixed and certain date for his invention of electrode spot welding, namely December 3, 1903, when he filed his application.

It is to be observed that Rietzel's affidavits which only undertook to carry his date of invention back of February 18, 1904, did not purport to carry it back to December 3, 1903, which is Harmatta's date.

It is respectfully submitted that the whole matter is utterly immaterial and that the Court will be only interested in the determination of whether Rietzel anticipated Harmatta in the invention of the subject matter of the patent in suit. It is perfectly clear that he was not such prior inventor.

The Patent Office was clearly in fault in not calling Rietzel's attention to the Harmatta application for the patent in suit, which had been on file in the Patent Office since December 3, 1903; but the Rietzel patent issued July 20, 1909, without Rietzel or the old Thomson Company, which owned the patent, having any knowledge of Harmatta's application.

Rule 96 of the United States Patent Office provides:—

"96. Whenever the claims of two or more applications differ in phraseology but relate to substantially the same patentable subject-matter, the examiner, when one of the applications is ready for allowance, shall suggest to the parties such claims as are necessary to cover the common invention in substantially the same language."

If, therefore, the Patent Office had had the Harmatta application in mind and had regarded the application of Rietzel as relating substantially to the same patentable subject-matter as that of Harmatta or as having a "common invention", it should have suggested to Harmatta the broad claims of Rietzel and given Harmatta a chance to go into interference with Rietzel before his patent issued.

It seems probable that the Patent Office so thoroughly realized the difference between Rietzel's point and projection welding and the electrode spot welding of Harmatta that it did not occur to it that there could be a "common invention" involved. Even as to the product claims, the Office very likely construed them, carelessly as we think, as limited to the product of Rietzel's process, as they undoubtedly construed his broad process claims as limited to the point and projection and "conducting block" electrode features that were essential to them.

After the issue of the Rietzel patent, the Patent Office did in fact on March 22, 1910, suggest to Harmatta that he was entitled to make Rietzel's broad claims with which alone we are concerned in this branch of the case, thus giving to Harmatta the opportunity of inserting those claims in his application and of going into interference with Rietzel as to those claims.

Meantime, from December 3, 1903, to the date of issue of the Rietzel patent, Harmatta had been pressing his

application, persistently seeking claims for the "electrode process of electric spot welding" which he had fully disclosed in his original application and which Rietzel had never disclosed. But it was only on the suggestion of the Patent Office, calling his attention to Rietzel's claims, that he seems to have realized that upon his application might be based claims for a broad expression of the underlying idea of uniting sheets in spots by a weld to take the place of a rivet *whether the process was the "projection welding of Rietzel" or his own "electrode welding"*. He therefore took advantage of the opportunity offered by the Patent Office to ask for such claims (Vol. II, pp. 1419-1427).

It is immaterial for the purposes of this case whether those broad process claims when added to the Harmatta application (they appear in his patent as Nos. 1-6) do or do not cover more than the Harmatta electrode process of spot welding. For the purposes of this case the plaintiff would be quite satisfied with a construction of them which limits them to the electrode process so clearly defined by Harmatta. As to the product claims, Nos. 17-21 of the Harmatta issued patent, which were inserted at almost the same time, Harmatta was clearly the first inventor of the subject-matter of those claims whether made by his own process or that of Rietzel.

When an interference was declared April 14, 1910 (Vol. III, p. 1838), Rietzel and the old Thomson Company, the owner of his patent, knew for the first time of the Harmatta application.

They must have been greatly disturbed when this was brought to their attention, for here was an application filed December 3, 1903; with broad claims introduced at the suggestion of the Patent Office which might, if a patent should issue to Harmatta with those claims, cover the Rietzel process and product as well as the entire art of spot welding. They took exactly the course that is

always taken under such circumstances. First by motions to dissolve the interference (Vol. III, pp. 1852, 1920-1923) they endeavored to persuade the Patent Office that Harmatta was not entitled to make such broad claims. Failing in this effort, they were face to face with an interference in which was to be tried out the issue of priority of invention. The first step in the procedure had been the filing of preliminary statements. Harmatta stood on the date of his application December 3, 1903. In Rietzel's preliminary statements, he made the allegation that he had conceived the broad invention of his claims late in the year 1897 and that he reduced the invention to practice in the latter part of July, 1898, and at that time first explained it to others (Vol. III, pp. 1843, 1917). Two preliminary statements were filed because after the interference was first declared on certain claims, other claims were added, as to which a second preliminary statement had to be filed.

Thus Rietzel went back in his preliminary statements to his inconclusive, fruitless and abandoned experiments which are described in this record (Vol. I, p. 633, *supra*, p. 69) and if he had all the facts clearly in mind, it may well be contended that he was not justified in making such an allegation. It is reasonable to suppose, however, that when he made the preliminary statements, twelve years after his experimental work, he believed that he could show that he had done much more in 1897 and 1898 than he subsequently found himself able to prove when the situation was really investigated as preliminary to the taking of proofs.

He should perhaps have been more careful in his pleading, but the published opinions of the Patent Office tribunals and reported decisions in patent cases as well as in interferences, show that it is but human and natural for inventors at the preliminary stages of a controversy

as to prior invention, and sometimes through to final hearing, to rely upon work which upon full investigation proves to be inadequate.

Such was the case here. Upon investigation counsel for the Thomson Company discovered that Rietzel could not carry his date of invention back of Harmatta's application of December 3, 1903, for his work of 1897 and 1898, which was all the work done by him prior to 1904, was merely futile and fruitless experiments which were utterly without significance. Also they were clearly abandoned for Rietzel did nothing after 1898 until the middle of the year 1904 after Harmatta's application had been filed (Townsend, Vol. I, p. 214, Q. 3).

We have (*supra*, p. 208) quoted decisions establishing the law on this point. We add here a few decisions of the Court of Appeals of the District of Columbia in interference cases to the same effect: —

Mason v. Hepburn, 1898 C. D. 510.

Warner v. Smith, 1898 C. D. 517.

Thompson v. Weston, 1902 C. D. 521.

Matthes v. Burt, 1905 C. D. 574.

The law is definitely settled.

The only course that seemed open to the old Thomson Company, to protect itself and its licensees and to save its commercial situation from ruin, was to buy the Harmatta application. It therefore sent Mr. Tischner abroad to see Harmatta and the Eisenhutte Silesia Aktien-Gesellschaft, which controlled his application. Tischner's mission was successful (Vol. I, p. 215). Harmatta executed an assignment of his application to the Thomson Company, February 3, 1912, which was given to the Silesia Company to be delivered to the Thomson Company when the agreement between those companies was "formulated and executed". This agreement (Vol. I, p. 429) was

delivered April 3, 1912, and with it the assignment, which was immediately recorded in the Patent Office, April 5, 1912 (Vol. III, p. 1948).

A very common situation was thus created where the rights of two interfering parties are owned by the same interest, in this case the Thomson Company. The Patent Office had been frankly informed of the situation by the recording of Harmatta's assignment. The Thomson Company had a choice of two courses of action. It could hire attorneys on each side to fight the interference through, take testimony on both sides, and carry the case to final decision through all the tribunals of the Patent Office and to the Court of Appeals for the District of Columbia, all of which would have involved a delay of years in the issue of the Harmatta patent; or it could investigate the facts, decide which of the two inventors was prior to the other, and stand on the patent to that inventor, thereby saving delay, litigation, expense and trouble and a prolongation of the patent monopoly.

The Thomson Company chose the latter course, which is a usual and clearly proper course under such circumstances and one which has been approved by the Patent Office and by the courts (*infra*, p. 233).

To bring this result about, the usual formalities were followed, Rietzel took no testimony, and on motion of Harmatta's attorney of record the issue of priority was decided July 22, 1912, in favor of Harmatta.

The Patent Office then further considered Harmatta's application, October 17, 1912, and cited a number of prior patents (Vol. II, p. 1434).

The attorneys for the Thomson Company, who had been substituted for Harmatta's former attorneys, amended the application, October 26, 1912 (p. 1436), nine days after the action of the Patent Office. This amendment brought the specification and claims to their present form.

The Patent Office allowed the application, October 31, 1912. The final fee was paid November 4, 1912 (p. 1455). The patent issued December 3, 1912. In all *only eight months* elapsed from the time the Thomson Company obtained title to the application to the time when it was issued. This is a record of extraordinary expedition.

The propriety of settling such a controversy as the Harmatta-Rietzel interference in this manner has been recognized by the courts.

In General Electric Company v. Laco-Philips Company, 233 Fed. Rep. 96 (S. D. N. Y.), the General Electric Company had acquired three pending applications for the Tungsten lamp which were in interference. The General Electric Company, instead of fighting the interference through, investigated and determined which application should prevail and had the patent issued on that application. This course of procedure was approved by the court (p. 100), which says:—

“The situation was that the plaintiff had paid large sums of money for these applications and naturally was interested in securing a valid patent. It was, of course, a matter of indifference to plaintiff which application was successful, provided that the patent was rightly issued to the first and real inventor. Thus a heavy responsibility was laid upon the attorneys for plaintiff, and, as a result, a thorough investigation was made by them, and after cautious and thoughtful consideration, plaintiff was advised that the patent should issue in favor of the Just & Hanaman application. The fact that the plaintiff, under the advice of careful and experienced counsel, thus decided for itself upon which patent to stand, is evidence of an open and frank manner of dealing with a difficult problem, and ipso facto relieved the proceeding of

any suggestion of collusion, which might have followed had different counsel been engaged by plaintiff to urge the merits of the respective applications then pending."

The decision of Judge Mayer in the District Court was affirmed by the Court of Appeals, which adopted Judge Mayer's decision as its own (p. 107).

It seems clear that there is nothing in this story which affects the validity of the Harmatta patent or the right of the plaintiff to enforce it. The preliminary statements of Rietzel like his affidavit above referred to, even if they be criticised as careless — and we do not believe that they are a fair subject for condemnation — can not affect the rights of the parties in this controversy. There is certainly no element of estoppel. If Rietzel made a mistake, it was a natural mistake of fact, or rather of mixed fact and law, for which he is to be condemned, if at all, only for exaggerating what he had done, and for not at the time fully investigating the subject. His statements deceived no one and no one acted upon those statements to his own detriment. The defendant certainly has not been harmed in the slightest degree, neither has the public. A patent for the electrode spot welding invention has been issued to Harmatta, who was certainly the first inventor both of the process and the product. He was clearly entitled to that patent. The grant of just this patent to him is exactly what the patent law contemplated. There is clearly no element of estoppel which affects the situation.

Blemishes in procedure and careless misstatements and exaggerations are frequently made as part of the complicated procedure in the Patent Office. We call attention to a few authorities showing how the courts deal with

such errors although we respectfully submit that in this case there is no occasion for any appeal to authority.

In *Commercial Mfg. Co. v. Fairbank Canning Co.*, 27 Fed. Rep. 78 (N. D. Ill., Blodgett, J.), the patentee had stated in his application for a patent that the invention was the same as that for which he had taken out certain foreign patents. This statement was made in an affidavit. On suit on his United States patent, the defendant set up that the United States patent had expired with these prior foreign patents, the invention being the same, and the defendant urged that the plaintiff was estopped from denying the identity of the inventions in the American and foreign patents by reason of the statement made and filed in his affidavit in the Patent Office. The court held that the plaintiff was not estopped to deny that the same invention was involved in the American and foreign patents, saying (p. 81):—

“We think there can be no doubt from the proofs in the case that both Medge and his solicitors, who are men of high standing in their professions, thought at the time the original patent was applied for that they were covering the substantial process which Medge had patented abroad; but if these parties were laboring under a mistake, their rights ought not to be defeated or seriously abridged by such mistakes, and we therefore feel compelled to examine the proof as to the identity of the foreign and American patents.”

The decision of Judge Story in *Barrett et al. v. Hall*, 1 Mason, 447, is to the same effect. This was a suit on a joint patent where each of the joint patentees had previously obtained separate patents for the same invention and afterwards they had obtained the joint patent in suit. The lower court charged the jury that the existence of the two prior sole patents for the same invention granted to

the same patentees did not affect the validity of the joint patent declared upon. He also directed them that the oaths of the plaintiffs respectively, made when they obtained the said prior sole patents that they severally believed themselves to be the true inventors of said machine, did not preclude them from showing a joint invention of the same machine and to claim as joint patentees therefor. On appeal Judge Story held that this charge to the jury was correct, saying (p. 474):—

“In the next place, if several patents are taken out by several patentees for a several invention, and the same patentees afterwards take out a joint patent for the same as a joint invention, the parties are not absolutely estopped by the former patents from asserting the invention to be joint; but the former patents are very strong evidence against the joint invention. The reason of this doctrine is, not that estoppels are odious in the law, but that a party may innocently mistake, as to the extent of his own claims; and though a sole and joint invention, by the same persons of the same thing, cannot exist in fact, yet a party may suppose, that he has invented, what in truth has been partly suggested by another mind.”

In *Kohler v. Kohler & Chambers*, 47 O. G. 247; 1888 C. D. 19 (decision of Commissioner Hall), Kohler and Chambers filed a joint application, and subsequently Kohler filed a sole application for the same invention. The two applications had been assigned to different parties, and an interference having been declared the assignees of the joint application, which had issued into a patent, moved to dissolve the interference on the ground that no patent could issue to Kohler as sole applicant under these circumstances. The motion was overruled, the Commissioner saying that the interference would develop the

truth as to whether the invention was joint or sole, and that the applicant Kohler was not estopped by reason of his oath, filed with the joint application, from asserting his rights as sole inventor and that he should not be

“denied a patent on account of having made an error or mistake as to the matter of his joint inventorship.”

This situation has frequently arisen in the Patent Office, which has uniformly followed the decision in *Kohler v. Kohler & Chambers*. See, for example, *Ex parte Schaeffer*, 1896 C. D. 30; 76 O. G. 1118.

Directly in point is the decision of Commissioner Mitchell in *Mead v. Brown*, 1889 C. D. 173; 48 O. G. 397, which held that an applicant in a pending interference, who claimed to have been the sole inventor, is not estopped by reason of his oath in a preliminary statement in a previous interference, wherein he was one of two joint applicants, nor by the testimony of his witnesses in that interference, from correcting an error, if an error could be shown to exist, as to the date when his invention went into public use. The Commissioner says (p. 175):—

“If it should be held that no consideration of justice, truth, or fact could avail to authorize the senior party to prove the actual date when the invention went into public use, then, if the fact should be otherwise than is asserted by the junior applicant, the latter might take a valid patent, while the earlier applicant would have been denied a patent because of the statutory bar of two years’ prior public use. A method of administration which involves such a result must be a mistaken one, and I am compelled to the conclusion that under his present application, at some stage of the proceedings arising upon it, Brown is at liberty to show, if he can and if the office requires it, that his invention was not in public use for more than two

years prior to his sole application. Such being the law, it follows that this is not a case in which an interference has been irregularly declared between one party who is entitled to a patent and another party who is forever estopped from obtaining a patent."

After citing the case of *Kohler v. Kohler & Chambers*, *supra*, the Commissioner continues (p. 176):—

"It seems to me that the same principle is involved in the pending case, and that the party who claims to have been the sole inventor is no more estopped to correct an error, if an error can be shown to exist, as to the date when his invention went into public use than he would be to deny and correct his sworn statement that the invention was originally made jointly with another."

To the same effect see:—

Howard v. Haywood, 1899 C. D. 8; 86 O. G. 184.

Saffert v. Mayer, 1902 C. D. 30; 98 O. G. 793.

The case of *Union Mfg. Company v. Lounsbury*, 2 Fish. 389, cited by the defendant, is not in point.

In that case suit was brought on the reissue of a patent, the original of which and also a later patent for an improved machine had been given extended terms by Act of Congress. The reissued patent was for a process while the original patent was for a machine. The court found that the original patent was "invalid, because it did not and does not describe a practical invention" (p. 392).

The fact that the invention was imperfect was fully brought out in the hearings before Congress on the question whether the terms of the patents should be extended and it was because the Committee of Congress pointed out that "no inconvenience can result to the public, or injury

to any individual by the renewal in the extension of the first patent, because the invention was imperfect", that Congress somewhat illogically granted the extension of the patent in question.

Of course the plaintiffs having asserted before Congress as a ground for the extension of the patent that the invention was imperfect and the patent invalid could not in equity establish the contrary, namely that the invention was complete and the patent valid.

The case is one of many where the courts have held that parties can not enforce a right which they have expressly repudiated, their repudiation having been duly accepted and acted upon.

There are no such circumstances in the case at bar and the *Union* case is therefore not in point.

DEFENDANT'S ESTOPPEL CONTENTION IS CLEARLY UNSOUND.

We shall not take the time of the Court to do more than call attention to one or two incidental details of defendant's argument on this point. Defendant suggests that the old Thomson Company delayed the Rietzel-Harmatta Interference that it might have a longer period for working under the Rietzel patent before the interference was decided, thus apparently adopting our view, that as soon as the Rietzel people knew of the Harmatta application, they must have recognized that ultimately a controlling patent would be issued to Harmatta. There is no foundation for any such suggestion. The Rietzel people did nothing which resulted in delay except to move to dissolve the interference, which procedure is as common in Patent Office interferences as is a demurrer or motion to dismiss in suits at law. Rietzel's preliminary statements and affidavits caused no delay whatever. Nobody was de-

ceived by them and they were a mere part of the ordinary procedure of a Patent Office controversy.

Defendant also alleges as wrongful conduct on the part of the old Thomson Company that it developed a license system under the Rietzel patent under which it received royalties for using spot welding machines and to support this contention refers to a license agreement of August 3, 1912, between the Thomson Company and the American Electric Welding Company (Vol. III, p. 2019). But so long as the Rietzel patent was in force as a valid patent, the Thomson Company was entitled to such royalties and on August 3, 1912, the date of the American Company's license, it owned the Harmatta invention which it had acquired April 3, 1912, and the license was under every patent "that is now or may be hereafter acquired by the Thomson Company". This included the Harmatta patent and the license was a grant under the Harmatta as well as the Rietzel patent. Twelve other patents and applications were specially named in the license.

Defendant also calls attention to two suits brought by the old Thomson Company on the Rietzel patent against spot welding infringers; but at the time of those suits the Rietzel patent stood as a patent covering such infringers. Neither of these suits progressed beyond the pleadings.

It is respectfully submitted that there is nothing material in defendant's contentions as to Rietzel or the Rietzel patent or the relation of Harmatta or of the plaintiff's predecessor thereto.

The opinion of the District Court in this case (Vol. I, pp. 24-50) severally criticises the conduct of the plaintiff's predecessor, the old Thomson Company, as to the prosecution of the Rietzel patent, the prosecution and settlement of the *Rietzel v. Harmatta* interference, the purchase

of the Harmatta application and the disclaimer of the claims in the Rietzel patent, of the subject-matter of which, as we have above shown, Harmatta was the prior inventor. The Court even charges fraud in some of these matters. These criticisms and charges are absolutely baseless, as is shown by the history of the events as above stated. We will not take the time of this Court to discuss them further. It is sufficient to say as to the Rietzel disclaimer (Vol. III, p. 1824), that as Harmatta was the first inventor of the subject-matter of the claims in question it was necessary to disclaim them from the Rietzel patent. No charges of fraud have been advanced on behalf of the defendant in the lower courts in this case.

CHAPTER V.

THE BARNEY & BERRY CASE.

Defendant has charged, as far as we can see without any basis whatever, that the case of *Thomson Electric Welding Co. v. Barney & Berry, Inc.*, 227 Fed. Rep. 428, was collusive (Vol. II, p. 798). In that case the Harmatta patent in suit was held valid and infringed by the Circuit Court of Appeals for the First Circuit, reversing the decision of Judge Dodge of the District Court, who had held that the patent was invalid for lack of invention.

We deny most emphatically this charge. There is not the slightest evidence to support it.

That case was bitterly contested from start to finish. Even after the decision of the Court of Appeals, the defendant moved to reopen the case in order to consider an alleged new reference, the French patent to Bouchayer, which motion was denied (Vol. I, p. 8).

The answer in that case set up as anticipations of the Harmatta patent thirty-three United States patents, twenty-four British patents, one Austrian patent, five German patents and seven French patents, including all of the patents to which reference has been made in this case except the United States patent No. 574,942 to Robinson and the British patent No. 14,536 of 1894 to Parkinson. The process described in the Robinson patent is merely a variation of the process described in the Kleinschmidt United States patent No. 616,436, which was carefully considered by the Court of Appeals and adds nothing of consequence to the prior art. Parkinson's British patent is for glutting and contains no disclosure or suggestion of spot welding.

The defendant has also asserted that in the Barney &

Berry case the McBerty prior use evidence was "suppressed" (Vol. II, p. 751).

As we have already shown, the "McBerty prior use", which we have discussed fully, was thoroughly investigated in the fall of 1913 by Mr. C. V. Edwards, counsel for the defendant, Barney & Berry, Inc., and affidavits concerning it were obtained by Mr. Thomas Howe, who was associated with Mr. Edwards as counsel for the defendant, with the assistance and cooperation of McBerty himself. These affidavits have been offered in evidence in this case and vitally contradict McBerty's present testimony, as we have shown.

The facts are stated by Mr. Edwards, called as a witness for the plaintiff in this case (Vol. I, p. 290): —

"A. I am very certain that there was absolutely no collusion in that case. Before the Barney & Berry suit was brought we had defended another suit for the Toledo Electric Welder Company brought against that company by the Thomson Company; that case was the Thomson Electric Welder Company or Thomson Electric Welding Company against the North & Judd Manufacturing Company, and I believe the Toledo Electric Welder Company was a nominal party also in the District of Connecticut. During the litigation and when the litigation on the Harmatta patent was threatened, Mr. Warren, the principal stockholder and active head of the Toledo Electric Welder Company, took me into his confidence as to the financial status of his company and consulted me frequently from time to time as to the best terms to be made by his company from the business standpoint of extending his business and the financial situation as regarding his ability to stand the litigation, and I believe that I was very closely in touch with everything of importance to the defend-

ant that happened throughout the entire period of the litigation on the Harmatta patent. I am certain that neither Mr. Warren nor anybody else ever intimated to me or to anyone on our side of the case that an honest and successful defense was not desired, and we were never limited or stinted or questioned as to the money spent on the defense. *We made the best defense we could.*

"Q. 9. Do you recall any negotiations for a settlement of the Barney & Berry case; and if so, what effect did that have upon the vigor of your defense?

"A. Negotiations for a settlement were in the air practically at all times. Mr. Warren, Mr. McBerty and representatives of another welder company, I think the Winfield Company, and another concern, Geuder, Paeschke & Fry, I think that is the name of the concern, met me at various times and expressed the thought that was often expressed to me by Mr. Warren, that it would be a good thing for the benefit of the welder industry if a license could be obtained under the Harmatta patent, and at various times we tried to bring that about. Every attempt failed, because generally the Thomson Company wanted too much in the way of royalty, at least more than the others thought they were willing to pay. There was never, however, any thought expressed by anyone that it would be desirable or safe to let the Thomson Company achieve a victory before settlement, because we all felt that if that happened the Thomson Company would either keep the field to itself or exact a prohibitive royalty and none of us felt like taking that chance. Certainly the possibility of a settlement never in the slightest degree diminished our effort to defeat the patent in the trial of the case. We did hope that a trial could be avoided, but never

for a moment allowed that thought to interfere with our preparation of the defense."

Judge Dodge in the District Court held that the Harmatta patent was invalid. This fact alone should be a complete answer to the scandalous charge that the parties conspired to sustain the patent.

As is so often the case, there had been negotiations for a settlement before the trial in the District Court in April, 1914. They came to nothing and did not affect the strictly adversary character of that trial. There is no evidence or assertion on behalf of defendant that after the trial which was in 1914, until the final decision of the courts of the First Circuit in 1916, there were any negotiations between the parties.

The purchase of the assets of the Toledo Company by the Thomson Company in 1916 after the final decision in the Barney & Berry case was the natural result of that decision holding valid the Harmatta patent in suit and ordering an injunction and account. The circumstances and negotiations which led up to that purchase are given by Mr. Farley, the present president of the Thomson Company, called as a witness by the defendant (Vol. II, pp. 809-814). The purchase was a transaction which was entered into upon at Mr. Farley's initiative, and it signaled and accompanied a change of policy on the part of the Thomson Company, which followed upon Mr. Farley's becoming president of that company in the summer of 1916.

Mr. Farley, as he testifies, had never even heard of the Thomson Company until the summer of 1916, and much less had he any knowledge of the Barney & Berry suit or of any previous negotiations with the Toledo Company for a settlement of that suit (Vol. II, p. 807). Upon acquiring stock control and becoming president of this com-

pany in 1916, Mr. Farley found it tied up by a contract with the Universal Company which put the sale of the spot welding machines entirely within the control of the Universal Company, the Thomson Company's only interest in the matter being in royalties; the new management concluded that the Thomson Company itself should undertake the manufacture and sale of the machines. But if this policy was to be pursued the Thomson Company would have to make a new arrangement with the Universal Company and would also have to acquire manufacturing facilities which it did not then have. As the Toledo Company did have such facilities, and the stoppage of its manufacture of spot welding machines would in the ordinary course of events soon follow the decision in the Barney & Berry case, the defense of which the Toledo Company had openly assumed, it was logical and obviously desirable for the Thomson Company, if possible, to obtain these manufacturing facilities. Accordingly, Mr. Farley opened negotiations both with the Universal Company to cancel the contract with that company, and with the Toledo Company to buy its plant and settle the litigation with it without an accounting. The negotiations were carried along simultaneously, one being dependent upon the other. Mr. Farley first got a 30-day option from the Toledo Company for the purchase of its plant. This was on November 2, 1916. He then made his contract with the Universal Company, giving that company stock in the new company to be formed (the plaintiff herein) to take over the spot welding business, and not until he had agreed with the Universal Company was he willing to take up the option with the Toledo Company, which he did later in November, 1916.

On the same date on which the Toledo Company's contract was signed, the Thomson Company made a separate contract with Mr. Warren, the general manager of the Toledo Company, by which it retained his services,

because of the advantage which his good-will with his customers would give and because it was believed that he could be of assistance to the Thomson Company in making settlements for royalties on account of infringing machines then in use.

The dealings with the Toledo Company and with Warren in November, 1916, had absolutely nothing to do with anything that had gone before, and were entered into at that time purely because it then seemed to the officers of the Thomson Company advantageous for them to obtain the manufacturing facilities of the Toledo Company and to have the services of Mr. Warren.

The defense in the Barney & Berry case was conducted by counsel of the highest reputation, experience and ability, who were unstinted in expense. Every point was contested, and none that gave promise was overlooked or neglected, and the case was actually won by the defense in the District Court. The decision of the Court of Appeals for the First Circuit sustaining the Harmatta patent in suit in that case is entitled to the full respect of this Court.

CONCLUSION.

For the foregoing reasons it is respectfully submitted that the decree of the Circuit Court of Appeals for the Sixth Circuit affirming the decree of the District Court dismissing the bill of complaint should be reversed and the cause remanded to said Courts with instructions to enter a decree for the plaintiff, holding the Harmatta patent in suit valid and infringed and ordering an injunction and an accounting as prayed for by the bill of complaint and awarding to the plaintiff its costs of suit.

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of Counsel for Plaintiff-Petitioner.